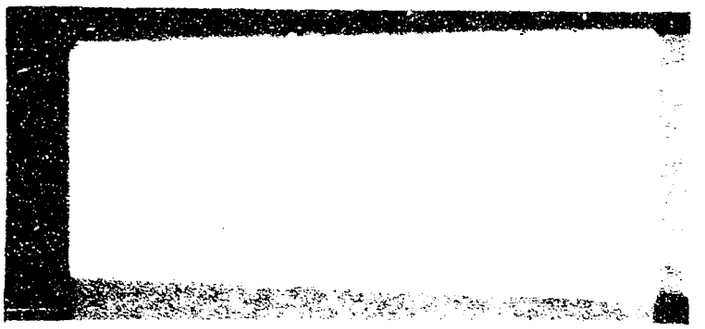

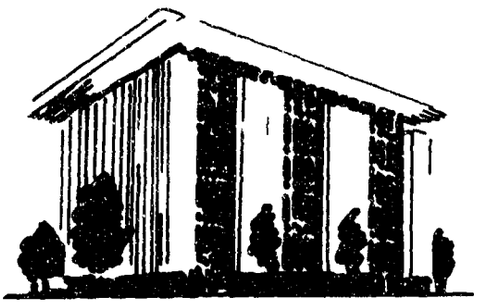

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TECHNICAL REPORT

September 30, 1969

Three Studies in Change: An Account of Data-Based Organizational Development Activities in Three Continuous Process Firms

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13. ABSTRACT

Descriptions of three case studies of organizational change programs undertaken by the Institute for Social Research. Comparative findings yield a number of potentially important implications for the management of development programs.

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OVERVIEW OF THIS REPORT

Early in 1966, the Business and Industry Program of the Center for Research on the Utilization of Scientific Knowledge began three simultaneous organizational development studies in the continuous-process chemical industry. Two of the studies continued to a successful conclusion; the third ended a little more than a year later, with some indications of minor improvement, but on a largely unsuccessful note.

The three sections which follow describe these three cases in some detail. Case 1 relates an account of a study which became an interesting natural experiment in change methodology. Case 2 describes and analyzes in some detail a study in which survey feedback was employed quite successfully to generate positive change. Case 3 describes a study in which resistance to the development effort became a major factor in what subsequently must be classed as a failure.

An effort is made to provide as much detailed analysis of quantitative data as possible. For this reason, the survey results for both the pre- and post-measures are described at some length, as are their relationships to hard criterion data (costs, volume of output, absence rates, etc.). Change which occurred in each case is analyzed by kind, degree, and location, with as much anecdotal evidence as is available and relevant.

The reader will recognize that somewhat different analytic methods are employed from one case to another, and that slightly different kinds of additional information were recorded in each study. On the one hand this represents a state of the science at that time; similar studies begun more recently will have profited from experience in these earlier efforts. On the other hand, this report is intended as much as a stimulator of methodological development as an expression of firm findings. In that sense, some variety of approaches and techniques is both useful and appropriate.

After the three cases have been presented, there follows a section which attempts to integrate some of the more obvious implications for the management of planned development activities in organizations. Not all of the implications are listed, certainly; many others may occur to the reader. We assume that there is accordingly, benefit to be gained by a thoughtful reading and rereading of the material covered.

CASE I - A NATURAL EXPERIMENT IN THREE PLANTS

INTRODUCTION

Early in 1966, representatives of a well-known company approached the Institute's Center for Research on Utilization of Scientific Knowledge about the possibility of working with us to measure and improve the organizational system in use in three of its plants -- which we shall designate as Plants E, F, and W. The management hoped to assess the plants' standings on interaction and performance variables, and based upon the findings, to move the system closer to the ideal of effective management.

After the inquiry, the CRUSK staff arranged for the administration of the measuring instrument. The 1966 questionnaire administration was then carried out in April and May, and initial tabulations of questionnaire data were available at the end of May.

During the remainder of 1966 and the early months of 1967, development activities based upon the data were carried out in Plants E and F, consisting of group feedback discussion sessions by employees at all levels of these two plants. CRUSK development staff members focused their activities during this period upon the training of internal resource persons to assist in the feedback and coaching process at all levels, and upon working with the top management groups in a developmental capacity.

Data for Plant W were tabulated in the same form as for the other two plants and were distributed to managers at all echelons. Some instruction in the mechanics of reading the data was supplied, and some minimal feedback coaching was provided to the top management group. Beyond this, no definite development program was undertaken by the CRUSK staff, and no effort was made to train internal resource people.

A second survey, using the same questionnaire instrument, was conducted in April and May of 1967, in an effort to determine how much improvement had occurred and where. As before, tabulated data were subsequently provided in a form suitable for feedback to managers and supervisors at all levels.

During this entire period, and into 1968, performance data from the operating records were provided by the company to the CRUSK project staff. Allied information of an observational, historical, or judgmental character was also provided.

Without our advance knowledge, there was mounted in Plants F and W, at approximately the same time (early 1966) a rather conventional cost reduction study. Operations were analyzed by a leading consulting firm and areas identified in which substantial savings could in theory be attained by cutting work crew size. With the help of the consulting firm, teams of persons outside the department being studied came in to advise the department manager and direct the implementation of the cuts. This cost reduction program was begun and completed within the first year of our study, in advance of the administration of the second (1967) questionnaire. The coincidence of this program with our own in some, but not all, of the locations made possible an unintended, but attractive natural experiment. The experimental conditions were:

Plant E - Organizational development only
Plant F - Organizational development plus cost reduction
Plant W - Cost reduction only

In all three plants, questionnaire data were tabulated and handed back to supervisors and managers. (No intensive feedback process, or "working through" of the data was undertaken in Plant W.) In addition, the company had previously followed the practice of sending members of its managerial staff to outside Managerial Grid Phase I sessions. Attendance proportions varied by plant and by department, but some pervasive influence of this program can be assumed to have been felt.

AN ORGANIZATIONAL DIAGNOSIS OF THE THREE PLANTS

Business organizations are commonly viewed as a collection of individuals with jobs that have been designed to fit together to get the work done. This way of thinking about organizations reflects a man-to-man approach to relationships between supervisors and subordinates, and assumes that once a job has been assigned to an individual, he performs his work more or less in isolation, except for influences from his immediate superior and contacts with others as required by the assignment.

Research evidence suggests, however, that a highly effective business organization is not a collection of individual people and individual positions. It is instead a pyramid of groups, each with responsibilities and functions that are fairly common among its members and somewhat different from those of members in other groups. Each group is linked to the rest of the organization by means of persons who are members of more than one group. Specifically, each group is ordinarily headed by an individual who is a supervisor of a group at one level and at the same time is a subordinate in a group at the next higher level (and occasionally linked laterally to other parallel groups).

Focusing on groups rather than individual persons and positions makes clear the importance of a number of characteristics of business life that might otherwise be ignored. For example, a group, no matter what its level in the company, does not operate in a vacuum. Instead, it operates within conditions which are created by what all of the other groups do. Groups high in the company have considerable latitude to function as they choose; they are relatively unconstrained by all other groups in the organization, except in so far as requests for policy decisions are addressed to them. (It must be recognized, of course that higher echelon groups experience pressures and constraints from <u>outside</u> the organization.)

As one moves farther down in the company, however, policies and standard procedures are spelled out in greater detail, the accumulated effects of what goes on in higher level groups become more important, and the latitude within

which the lower level groups can operate becomes smaller. The lower one goes in the hierarchy, the more constrained the groups are by the actions of other groups in the organization.

The leadership behavior of a manager (and, therefore, the peer leadership of his subordinates and hence the quality of his group's functioning) stems from a number of factors. Many of these factors reflect his personal make-up -- for example, his values, training, information, and past experience. But his leadership behavior is also affected by the way other groups function around, and particularly above, his own. The ability of a manager to facilitate work or emphasize goals may be seriously impaired if the goals and objectives which he is supposed to be accomplishing are unclear or unreasonable. His ability to behave supportively may similarly be limited by harsh or punitive policy decisions at higher levels.

These conditions, outside and especially above, a particular manager's group, are really nothing more than the accumulated effects of the ways in which other groups function. Helpful or harmful policies, for example, are the "output" of higher echelon groups with good or poor leadership. We call these accumulated effects organization climate, and we measure them by asking the members of the lower level groups to respond to items in a number of categories:

Organizational Climate Variables

Upward Receptivity

"How receptive are those above you to your ideas and suggestions?"

Lateral Communication

"How adequate for your needs is the amount of information you get about what is going on in other departments?"

Motivation

"To what extent are these things about working here (people, policies, conditions) that encourage you to work hard?"

Decision making

"How are objectives set in this company?

"In this company, to what extent are decisions made at those levels where the most adequate and accurate information is available?"

"When decisions are being made, to what extent are the persons affected asked for their ideas?"

"People at all levels of a company usually have know-how that could be of use to decision-makers. To what extent is information widely shared in this company so that those who make decisions have access to all available know-how?"

"To what extent are the persons who make decisions aware of problems at lower levels in the company?"

Control

"In general, how much say or influence does each of the following groups of people have on what goes on in your department?"

Foremen

Top managers (president, vice presidents, heads of large divisions, etc.)

Employees (people who have no subordinates)

Department heads (supervisors and superintendents)

Coordination

"Between departments, how frequently is work time lost because of failure to do proper planning or coordinating with relevant people?"

"In working with other departments, problems are bound to arise from time to time. When these problems do occur, to what extent are they handled well?"

"Which of the following best describes the manner in which problems between departments are generally resolved?"

The measurements and general concepts discussed in the preceding pages can be used to diagnose the strengths and weaknesses in any unit or department of a company, or in the company as a whole. Probable trends in the pattern are also capable of being revealed. A diagnosis of this type can be used to guide decisions concerning steps to be taken to eliminate any undesirable trends and to improve the likelihood of desirable developments.

Assessing the operation of a group requires that we take all of the measures that we have described into account: the context measures, managerial leadership, and peer leadership. As we noted earlier, an organization or company is a pyramid of groups. Assessing the operation of an entire organization requires that we assess the operations of all groups at all levels and study the ways in which they relate to one another. We call this process Organizational Diagnosis.

The following procedure is followed in preparing an Organizational Diagnosis. First, for each work group in the organization the leadership, group functioning, and context measures discussed above are recorded. Next, the work groups are assembled according to level in the organization, with all groups at a given level assigned to the same category or "tier." In addition, the hierarchical reporting relationships among groups at different levels are noted, so that the measures can be grouped vertically according to major functional areas (for example, Marketing or Production) as well as horizontally by level (for example, all General Foremen). Then, on each measure discussed earlier, a work group's score is compared to a standard for that measure, consisting of the average score received by work groups at a comparable level in a number of other organizations. Measures on which the work group is above the standard or below the standard are noted and recorded. When this has been done for every work group in the organization, the result is a picture of the high, average, and low scores which characterize each group at various levels. With this array of highs, averages, and lows in hand, it is then possible to locate dimensions which appear to be generally problematic or generally above average. This is done for all groups and then examined in terms of level or within a particular functional areas in the organization. A description of these high and low scores, along with a discussion of the apparent causal relationships between the problems at one level or in one function and the problems at other levels or in other functions, constitutes the Organizational Diagnosis.

Plant E

Top Management: These facts indicate that, in 1966, Plant E was an organization with no organizational climate problems at the top management level, and with climate strengths in the areas of (a) upward receptivity to ideas and information and (b) a motivational climte conducive to accomplishment. At this same top level, there were in 1966 no managerial leadership strengths, and there were weaknesses in the work facilitation area. Peer leadership was strong in support, but weak in all other areas. Still in all, top management people were strongly satisfied on all counts.

Middle Management: Top management's leadership deficiencies did show up, however, in the form of perceived climate deficiencies for middle managers, in the appropriate areas of (a) lateral communication among departments and units, (b) the motivating character of policies and procedures, and (c) the decision-making structure of the organization. Top Management's inadequate peer interaction and work facilitation seem to have been picked up in the leadership practices of middle managers, which were at that time viewed as deficient in these two aspects. As in the case of top management, no leadership strengths were seen to exist. Peer leadership was mediocre, reflecting no strengths but no major problems. Unlike top managers, middle managers were in 1966 not entirely satisfied: they were specifically dissatisfied with the company, with their pay and with their immediate superiors.

Lower Level Management: Characteristics of lower-level management in Plant E were in 1966 expanded reflections of what we have already observed at middle and top management levels. The organizational climate was viewed as almost entirely negative (only control was not seen to be a problem). Managerial leadership was generally mediocre, peer leadership deficient in interaction facilitation. Finally, persons responding about this level saw all satisfactions to be problems.

Trends, 1966 - 1967: The effect of the events between 1966 and 1967 was to raise the level of leadership on all dimensions except interaction facilitation for top, and on all dimensions for middle managers. Work facilitation and interaction facilitation ceased to be problems, and support and goal emphasis actually became strengths. Similarly, peer leadership increased at all three levels, most dramatically at the top management level, where problems were reduced and strengths built. (Goal emphasis actually moved from the problem category to a strength.)

Climate problems at the middle management level disappeared, and upward receptivity to information became a strength. Climate problems remained unchanged for lower levels of management, however. Top managers retained satisfaction strengths on all measures. Middle managers continued to see weakness only in the area of satisfaction with pay, and lower level managers no longer saw satisfaction with the superior and peers to be problem areas.

The major effect of the year's events, therefore, was the building of managerial and peer leadership behaviors at the top and middle management levels, with certain positive consequences both for the climate within which middle management operates and for satisfactions at all levels.

Plant F

Top Management: The picture at this level Plant F is slightly different from that at the same level in Plant E. There were in 1966 climate strengths in two of the same areas as in Plant E, Upward Receptivity and Motivation. Coordination was a problem area, however. There were no problems in either managerial or peer leadership; on the contrary, goal emphasis, interaction facilitation, and support were managerial strengths. Top managers were satisfied on most counts, but satisfaction with the company was a problem.

Middle Management: In the climate category, middle management at Plant F was in 1966 strong in Upward Receptivity, but perceived problems to exist in Lateral Communication and Coordination. Work facilitation was a strength of both managers and peers, and peers were also perceived to be strong in interaction facilitation. Once more there were no perceived managerial leadership problem areas, although goal emphasis was perceived to be a problem among peers. Middle managers were strong in satisfaction with their immediate superiors and with their peers, but satisfaction with the company and with the job were problems.

Lower Level Management: In 1966 at this level of the organization there were no strengths in any category. All climate measures except control were problems. Work facilitation was a problem in both the managerial and peer areas, and all satisfactions except satisfaction with peers were problems.

Trends 1966 - 1967: Events between 1966 and 1967 had the effect in Plant F of emphasizing improvement in climate and peer leadership areas among top management, peer and managerial leadership and some climate measures among middle management, and one dimension of leadership for both managers and peers at the lower levels.

More specifically, positive changes emphasized lateral relations at the top management level. Improvements occurred in lateral communication, decision-making, and coordination, as well as in peer goal emphasis and peer interaction facilitation.

At the middle management level, organizational climate improvements occurred in motivation and coordination, as well as in managerial support and goal emphasis. By far the most dramatic change at this level was in peer goal emphasis: this measure moved from a position of problem in 1966 to one of strength in 1967.

At the lower management level, both managerial and peer work facilitation measures improved, although no improvements occurred in climate measures.

The satisfaction measures present interesting contrasts across the three levels. At the top management level a pattern of shifts emerges: satisfaction with the job and with pay, although they do not become problems, are no longer strengths. Satisfaction with peers joins satisfaction with the supervisor as a strength, and satisfaction with the company disappears as a problem. At the middle management level, no appreciable change in the satisfaction picture occurs, although satisfaction with pay becomes a problem. At the lower management level, subordinates of these managers show a disappearance of all satisfaction problems which had existed in 1966: company, job, pay, and supervisor.

The general picture of change which emerges, therefore, is one of improvement in lateral relations at the top management level, of increases in motivationally relevant leadership behaviors at the middle management level, and of work facilitation leadership behaviors and satisfactions at the bottom levels of the organization.

Plant W

Top Management: All climate measures were problems in 1966. There were no managerial nor peer leadership strengths. Interaction facilitation was a problem for both managers and peers, and managerial work facilitation was perceived to be problematic as well. No satisfaction measures were strengths, and satisfaction with the company and with the job were definitely problems.

Middle Management: In 1966 every measure except managerial interaction facilitation was a problem.

Lower Level Management: There were in 1966 no strengths. All climate measures were perceived to be problems, as were managerial goal emphasis, managerial work facilitation, and peer interaction facilitation. All satisfaction measures except satisfaction with pay were also problems.

Trends 1966 - 1967: Organizational climate measures changed only slightly by 1967, and only for the top management level, perhaps by diffusion of changes going on in the parent location (Plant F). Managerial leadership generally deteriorated during the year. At the top management level there was an increase in preoccupation with the technical system (managerial work facilitation), but a decrease in motivational skills (goal emphasis), and no solution to a rather serious team-building (interaction facilitation) problem. Team-building actually became a problem over the year at the middle management level. At the lower management level there developed over the course of the year simply increased pressure upon the work force (more goal emphasis, less support, less team building, and poor work facilitation). Satisfaction problems, which were pervasive in 1966, were not substantially alleviated (and in some instances were considerably worse) by 1967.

In contrast to this general picture of deterioration, there is one area in which Plant W showed substantial increases during the year. Peer leadership, particularly those dimensions concerned primarily with people (support, interaction facilitation) increased from 1966 to 1967. Although this would, in other situations, be considered a favorable development, against a backdrop of unfavorable climate, managerial leadership, and satisfaction conditions it very probably represents only a growing solidarity for mutual protection in the face of threat.

RELATIONSHIPS TO OPERATING EFFECTIVENESS

Despite the shortcomings of many operating records as criteria of effectiveness, the value of our questionnaire measures must be demonstrated by their ability to predict hard, measured performance. Accordingly, we analyzed relationships of questionnaire to performance variables in this study, keeping in mind several shortcomings:

(A) Adequacy of Performance Measures -
Company operating records serve a number of purposes. The measures contained in them, although they may be satisfactory for making judgments about pricing, equipment usage, and the like, are often quite unsatisfactory as criteria of operating effectiveness. Often they are especially constructed to flag the impact of events more or less "external" to the company's functioning as a company. In this sense they may maximally attend to fluctuations in product mix, raw materials quality, or equipment maintenance, but pay minimal attention to the overall production costs and financial success of the corporation.

(B) Requirements of the Work -
Some organizations are closely geared in their functioning to the technical systems that they have - their hardware. Other organizations, such as sales or clerical organizations, are more immediately affected by the motivational character of their pattern of operation. Organizations will differ, therefore, in which variables relate most strongly to their effectiveness.

(C) Lag Time -
Changes in organizational functioning, e.g., shifts in managerial leadership, flow through organizations at different rates. In some organizations, particularly those with few levels of hierarchy between top management and non-supervisory employees, a change is felt rather rapidly. In general, the less complicated an

organization is, the shorter its lag time will be. Short lag time, therefore, means that our measures should relate to performance soon after the conditions measured come into being. Long lag time means, conversely, that many months of performance must be observed before relationships appear.

From the outset of the project, there was an interest in relating survey results to measures of organizational effectiveness. Conversations with responsible company officials led to the use of the following measures:

From Company Operating Records:

Direct Labor Cost -

Actual direct labor dollars spent during the current month, divided by the amount budgeted for that month, by cost center.

Total Variable Expense -

Actual dollars spent during the current month, divided by the amount budgeted for that month, by cost center, for Direct Labor Cost and Total Variable Burden combined (includes Materials Cost where available and appropriate).

Materials Cost -

Actual dollars spent during the current month, divided by the amount budgeted for that month, by cost center, for materials going into the product. This was available only for certain cost centers in Plant E.

Absences -

The number of employees absent in a work group in any given month, divided by the total number of employees in that work group. This was available by department in Plant W, and by high versus low departments in Plants E and F.

From Questionnaire Measurements:

Satisfactions -

Five satisfaction measures (Satisfaction with Company, Supervisor, Pay, Job, and Peers) were obtained from the questionnaire survey.

Ability to compare relationships from one plant to another formed a guideline for determining the potential usefulness of these various measures. Materials Cost was available only for a portion of the cost centers in Plant E, and, for this reason, after an initial period of exploration was disregarded as a criterion. Absences, although a desirable measure, were available for Plants E and F only as "high" versus "low" categorizations. Here, as in the two preceding cases, the measures were abandoned after an initial exploratory period.

Our attention in this report, therefore, is focused upon three sets of criterion measures:

Direct Labor Cost
Total Variable Expense
Satisfactions

Only brief mention will be made of early findings relating to certain measures subsequently omitted.

To match cost data more closely to our unit of analysis (the basic work group), cost center performance measures were assigned to all work groups within the cost center. The relationships reported, therefore, understate the true relationships because there are an artificially large number of tied performance scores.

This limited set of measures certainly does not constitute an exhaustive array. There are in the array measures of the cost of performing the work. There are, however, no measures, separately by cost center or work group, of the volume of work being done. Quality of the work was available by cost center only for a few units in one of the plants. Measures of at least these additional areas would certainly be necessary for any claim to be made that effectiveness is adequately measured.

Finally, satisfaction questions from the survey are an indirect reflection of the mood of the work force. Direct expressions of their loyalty to the company, in the form of turnover, grievances, stoppages, slowdowns, and the state of labor relations in the plants generally would be desirable, but are unavailable. Satisfactions are employed in their stead.

We have, therefore, a partial, but perhaps not a completely representative, picture of effectiveness to which to compare measurements of managerial behavior and group and organizational functioning.

Relationships to Performance Criteria of Effectiveness

In relating our measures to work group performance, we wish to answer several questions:

(1) Are there differences among the three plants in the ability of our questionnaire measures to relate to performance of their work groups?

(2) Are our measures better able to relate to performance in an early time period (1965-1966) than to performance in a later time period (1967-1968)?

(3) Are there differences among categories of measures (Climate, Managerial Leadership, Peer Leadership, Satisfactions) in their usefulness in relating to performance?

(4) How large are the relationships of our questionnaire measures to performance; that is, how much of the variation in performance among work groups are we able to account for?

To condense and summarize a great number of relationships which occur, we have focused our attention upon what we shall term "best predictors." These measures are the result of a search through relationships of survey data to performance in each month, locating by that search the highest, second highest, and third highest correlations. A count is then made of the number of months in which each measure appears as first, second, or third highest. "Best predictors" are therefore those which (a) predict most strongly of all, (b) in a substantial number of months.

Tables 1 and 2 show the best predictors of performance, the range of their relationships, and the month or months in which that relationship reaches its greatest magnitude. In the sections which follow we shall consider these data, aggregated in various ways to answer each of the questions presented above.

TABLE 1

BEST PREDICTORS OF PERFORMANCE
1966 SURVEY

	Total Variable Expense		Direct Labor Cost		Absence		Materials Cost	
	Range	Peak Month	Range	Peak Month	Range	Peak Month	Range	Peak Month
Plant E								
MIF	-.20 to -.44	Apr 67	MIF -.21 to -.39	Apr 67	MS -.22 to -.26	Nov 65	Coord -.29 to -.35	Jun 67
PWF	-.20 to -.26	Nov 65	Mot -.22 to -.37	Mar 66	MGE -.21 to -.25	Feb 66	Mot +.28 to +.40	Oct 66
			Sat/Job -.20 to -.29	Aug 67	Coord -.22 to -.23	Nov 65	PGE +.32 to +.39	Oct 66
Plant F								
Comm	-.34 to -.68	Mar 67	Comm -.46 to -.51	Nov 67	PGE -.32 to -.56	Jan 66	-----	
MWF	-.30 to -.57	May 67	PWF -.43 to -.52	Nov 67				
PWF	-.32 to -.63	Nov 67						
Plant W								
Comm	-.24 to -.48	Feb 66	Comm -.27 to -.54	Apr 66	-----		-----	
Mot	-.28 to -.41	Feb 66	Coord -.26 to -.34	Apr 67				
Control	-.28 to -.41	Sep 66	MIF -.26 to -.40	Sep 66				
MS	-.25 to -.36	Mar, Sep 66	MS -.27 to -.43	Apr 66				

TABLE 2

BEST PREDICTORS OF PERFORMANCE
1967 SURVEY

	Total Variable Expense		Direct Labor Cost		Materials Cost	
	Range	Peak Month	Range	Peak Month	Range	Peak Month
Plant E						
MIF	-.24 to -.41	Jan 68	MIF -.23 to -.53	Apr 67	Control +.35 to +.60	Oct 66
PIF	-.24 to -.36	Oct 66	PS -.22 to -.35	Apr 67	D-M +.34 to +.40	May 67
			MS -.24 to -.41	Feb 67		
			PGE -.24 to -.33	May 67		
Plant F						
MS	-.31 to -.56	Apr 67	MS -.32 to -.50	Oct, Nov 67		
MOT	-.38 to -.53	Apr 67	MWF -.36 to -.52	Apr 67		
PGE	-.35 to -.49	Apr 67	MGE -.34 to -.52	Apr 67		
Plant W						
Sat/Co	-.36 to -.40	Feb 66	PGE -.27 to -.50	Sep 66		
MOT	-.30 to -.39	Feb 66	Sat/Pay -.28 to -.42	Feb 66		
MWF	-.33	Apr, Aug, Sep 66				

Are There Differences Among the Three Plants?

Table 3 presents average peak correlation coefficients for all variables that appear as best predictors. Each plant is shown separately, exhibiting data for relationships to the 1966 survey, the 1967 survey, and to both surveys combined. When in this manner we disregard variable categories, we find that there are more marked relationships of questionnaire measures to work group performance in Plant F than in either of the other two plants. In addition there appear to be slightly greater relationships of our measures to performance in Plant W than Plant E.

Do Questionnaire Measures Relate Better to Performance in 1965-66 or 1967-68?

Table 4 presents average best predictor coefficients in relation to performance during months in 1965 and 1966 and to performance during months in 1967 and 1968, separately by plant and by variable category. We find that in Plant E relationships of our measures to performance are about equally strong for both groups of months. Plants F and W present patterns different from that found in Plant E, and different from each other. In Plant F we find a much stronger relationship of climate and Managerial Leadership variables to performance in 1967-1968 than to performance in 1965-1966, and relationships equally strong in both years for Peer Leadership variables. Plant W, on the other hand, shows little strength of relationship to performance in 1965-1966.

In this light it is interesting to note further from Table 3 that the 1966 survey is a better predictor of performance than the 1967 survey in Plant F, a worse predictor than the 1967 survey in Plant E. In Plant W both are approximately the same in their ability to relate to performance.

Are Some Measures Better than Others in Relating to Performance?

Table 5 presents average best predictor peak correlations for each category of variables, combining all three plants, but separately by 1966 survey, 1967 survey, and both surveys combined. These data suggest that, when differences among plants are removed, there are approximately equal

TABLE 3

MEAN BEST PERFORMANCE PREDICTOR PEAK CORRELATION COEFFICIENTS FOR PLANTS, ALL VARIABLES*

Year	Mean r's with Performance		
	Plant E	Plant F	Plant W
1966 Survey	.33	.58	.42
1967 Survey	.43	.52	.41
Both Surveys	.37	.55	.41

*Because of scale directions, relationships of some variables are positive, others negative; no sign is indicated for this reason. The prevalent relationships considered, however, are those in which a high survey score accompanies good performance.

TABLE 4

MEAN BEST PERFORMANCE PREDICTOR COEFFICIENTS FOR 1965-66 AND 1967-68 PERFORMANCES, BY PLANTS AND VARIABLE CATEGORIES*

	Plant E		Plant F		Plant W	
Variable Category	Perf. in 1965-66	Perf. in 1967-68	Perf. in 1965-66	Perf. in 1967-68	Perf. in 1965-66	Perf. in 1967-68
Climate Variables	.41	.38	-	.58	.45	.34
Managerial Leadership	.25	.44	-	.54	.38	-
Peer Leadership	.34	.34	.56	.55	.50	-
Satisfactions	-	.29	-	-	.41	-

*Because of scale directions, relationships of some variables are positive, others negative; no sign is indicated for this reason. The prevalent relationships considered, however, are those in which a high survey score accompanies good performance.

TABLE 5

MEAN BEST PERFORMANCE PREDICTOR PEAK CORRELATION COEFFICIENTS FOR VARIABLE CATEGORIES, ALL PLANTS*

Variable Category	Mean r's with Performance		
	1966 Survey	1967 Survey	Both Surveys
Climate Variables	.43	.48	.45
Managerial Behavior	.39	.48	.44
Peer Behavior	.48	.40	.45
Satisfactions	.29	.41	.37

*Because of scale directions, relationships of some variables are positive, others negative; no sign is indicated for this reason. The prevalent relationships considered, however, are those in which a high survey score accompanies good performance.

abilities to predict performance for all categories of variables except Satisfactions, which are slightly lower than measures in the other three categories.

Table 6 presents an elaboration separately by plant of the data presented in Table 5. Here we find that, for the 1966 survey, all categories are about equal in size of relationships within any one plant (and follow the order shown in Table 3). However, for the 1967 survey, Plant E shows a progression from climate variables, with strongest relationships, to Managerial Leadership measures, to Peer Leadership measures (with lowest relationships), and finally to Satisfactions, where no best predictor relationships occur at all. For 1967, Plant F shows a similar ordering, but the differences among categories are extremely low. Plant W, on the other hand, exhibits for 1967 a different pattern: strongest relationships are to Peer Leadership measures, lowest to Managerial Leadership, with climate and Satisfaction measures displaying relationships between these two levels.

How Large are These Relationships?

From all of the data presented, and especially from Tables 1 and 2, it appears that relationships to performance in Plant E reach a magnitude of .50 to .60, although a more typical level is within the .30 to .50 range. In Plant F, relationships as high as .60 to .70 are obtained, with the more typical level within the .35 to .55 range. For Plant W, a peak of .50 to .55 is obtained, against a more typical level within the .25 to .45 range.

In more concrete terms, these findings mean that the questionnaire data do in fact predict up to one-third of the performance (primarily cost) variation in Plant E, up to one-half of the variation in Plant F, and up to one-fourth of the variation in Plant W, from one month to 19 months in advance of those variations actually occurring.

Relationships to Satisfaction Criteria of Effectiveness

A somewhat different search was made to locate those other questionnaire indices most closely associated with the satisfaction measures. Only two

TABLE 6

MEAN BEST PERFORMANCE PREDICTOR COEFFICIENTS
FOR PLANTS BY VARIABLE CATEGORY*

	1966 Survey			1967 Survey			Both Surveys		
Variable Category	Plant E	Plant F	Plant W	Plant E	Plant F	Plant W	Plant E	Plant F	Plant W
Climate Variables	.34	.60	.44	.51	.53	.39	.40	.58	.43
Managerial Leadership	.34	.57	.40	.45	.52	.33	.39	.54	.38
Peer Leadership	.33	.57	-	.34	.49	.50	.34	.55	.50
Satisfaction	.29	-	-	-	-	.42	.29	-	.42

*Because of scale directions, relationships of some variables are positive, others negative; no sign is indicated for this reason. The prevalent relationships considered, however, are those in which a high survey score accompanies good performance.

measurements (1966 and 1967) are available; we may, therefore, look at relationships to other measures within any one survey, or we may look at the extent to which we are able to predict satisfaction in 1967 from other indices collected in 1966.

Inspecting all possible relationships to satisfaction measures in the various data sets indicates quite conclusively that there are among these five measures (Satisfaction with Company, Job, Supervisor, Pay, and Peers) really three distinct clusters of measures. One cluster consists of Satisfaction with the Company, with the Job, and with Pay. The other two measures stand separately: Satisfaction with the Supervisor and Satisfaction with one's Peers. The best predictors of these three sets of measures are remarkably constant from year to year and from plant to plant.

Table 7 presents average correlation coefficients of two categories of best correlates of these satisfaction measures, "Universal" (related to the satisfaction measure almost wherever it appears) and "Frequent" (related to the satisfaction measure in a majority of instances, but not all).

Implications of Organizational Change from 1966 to 1967 for Performance Prediction

An important issue is the correspondence of "best predictor" variables to those things most affected by the events which occurred between 1966 and 1967. A number of these events could well be targets for detailed analysis; however, in this report our attention will be focused upon three major programs:

A. Organizational development work undertaken by or with the Institute for Social Research.
B. The cost reduction program in Plants F and W.
C. The Managerial Grid Program

ISR Organizational Development Work

Table 8 presents a comparison of "best predictors" with diagnosed changes in questionnaire measures from 1966 to 1967 for the lowest echelons of the three plants (groups supervised by first and second-level managers).

TABLE 7

AVERAGE CORRELATIONS WITH SATISFACTION

	Plant E		Plant F		Plant W	
	Within Surveys	1966 to 1967	Within Surveys	1966 to 1967	Within Surveys	1966 to 1967
Company, Job, Pay						
Mot	.72	.49	.64	.56	.76	.59
Universal						
D-M	.62	.31	.60	.56	.74	.50
Coord	.68	---	.54	.50	.62	---
Frequent						
Comm	.60	.47	.64	.53	.76	.61
Supervision						
MS	.76	.28	.83	.62	.88	---
Universal						
MWF	.75	.25	.81	---	.81	---
MIF	.72	.30	.71	---	.72	.44
Frequent						
MGE	.71	---	---	---	---	.47
Peers						
PS	.58	.39	.60	.52	.72	---
Universal						
PGE	.59	.30	.58	---	.71	---
PIF	.54	---	.61	---	.60	---
Frequent						
MOT	.56	.30	---	.45	---	---

TABLE 8

CHANGES FROM 1966 to 1967
AT THE LOWER AND LOWER-MIDDLE PRODUCTION MANAGEMENT LEVELS,
AND BEST PREDICTOR, FOR THREE PLANTS

(See Legend on Following Page)

Plant Variable	Lower & Lower-Middle Production Management Changes*	Best Predictors of Future Performance
Plant E		
Climate Variables	-	C
Managerial Leadership	(+MS)**	MS,MIF
Peer Leadership	+PIF	PS,PGE
Satisfaction	+S	J
Plant F		
Climate Variables	(+L)	L, U, M
Managerial Leadership	+MWF	MWF, MS, MGE
Peer Leadership	+PWF	PWF, PGE
Satisfaction	+C, +J, +$, +S	-
Plant W		
Climate Variables	..	L, U, M, I, C
Managerial Leadership	-MS, -MIF, +MGE	MS, MIF, MWF
Peer Leadership	+PIF	PGE
Satisfaction	-$	C, $

A legend for the symbols used in this table appears on following page.
*Changes presented are taken from the group diagnositic information for groups with performance data.
**Changes which appear in parentheses are those which occurred primarily at the next level above first-level supervision.

LEGEND FOR TABLE 8

Context

L - Lateral Communication
U - Upward receptivity to information
M - Motivation
I - Control (Total Influence)
D - Decision-making
C - Coordination

Leadership

S - Support
GE - Goal Emphasis
WF - Work Facilitation
IF - Interaction Facilitation

Satisfaction

C - Satisfaction with Company
J - Satisfaction with Job
$ - Satisfaction with Pay
S - Satisfaction with immediate superior
P - Satisfaction with Peers

Only these groups are considered, since, for the most part, the performance data reflect directly the activity of groups at these levels.

Correspondence between position change in questionnaire data and "best predictor" status of measures is closest for Plant F. Changes in Lateral Communication, Managerial Work Facilitation, and Peer Work Facilitation parallel status as best predictors of performance. In this plant, therefore, positive change occurred on those measures which are most strongly related to performance.

Some parallel is observed in Plant E as well. Managerial Support is a measure which improves and which is a best predictor of performance. For the most part, however, correspondence is less than in Plant F.

In Plant W, there is a negative correspondence. Managerial Support, Managerial Interaction Facilitation, and Satisfaction with Pay predict performance best, but change for the worse. Those things which do show some improvement are not best predictors, and other measures (nearly all climate measures, plus Managerial Work Facilitation) which are best predictors were serious problems in 1966 and remain so.

This clear picture must be somewhat qualified to be entirely accurate. Other measures than "best predictors" relate to performance. Many of these show positive change in Plant E and Plant F from 1966 to 1967. Conversely, the two measures which show positive change in Plant W (Managerial Goal Emphasis and Peer Interaction Facilitation) do relate to performance to some extent, although they are not best predictors in that plant.

Nevertheless, the picture holds in general. Looking across entire plants, those measures upon which lowest-level groups in Plant F showed the greatest improvement are those most closely associated with good performance. A similar tendency is suggested in Plant E. In Plant W, however, best predictors either change for the worse or remain problems.

This comparison is a gross one. It compares the two plants where extensive development work was conducted under the auspices of ISR with one plant where no extensive work was done. A more detailed study is possible if we compare, within Plants E and F, those units where the development

work is judged to have proceeded most smoothly and skillfully with those where it is judged to have fared worse.*

Development activities guided by ISR in Plants E and F were of two types: (a) feedback of survey data to work groups at all levels (which as a technique involves intensive discussion of its own data by each work group), and (b) group problem-solving development work with top management groups. The two plants approached these two activities in different ways and to different extents.

In Plant E, feedback was more extensively formalized than in Plant F. Each manager and foreman in Plant E was directed to discuss the data with his subordinate work group and to subsequently file a report of the results of the session(s). In Plant F, heavier reliance was placed for feedback's completion upon the informal norms of the organization than upon formal accountability.

Team, or group problem-solving, development work was more intensively undertaken among top management groups in Plant F than in Plant E, on the other hand. A number of sessions were held in Plant F in which roles and behaviors were explored in terms of their impact upon the system. Plant E, however, made little more than an initial attempt in this area.

Results of Successful Feedback

Data relating to success in the feedback operation are presented in Figures 1-10. Figures 1 and 2 present profiles on Managerial, Peer, Climate and Satisfaction measures in 1966 and 1967 for groups where the feedback process was evaluated by company personnel to have gone best, moderately well, and least well in Plant E. Figures 3 and 4 present similar profiles for Plant F.

From Figures 1 and 2 we see that there was a distinct tendency for groups where feedback subsequently went best to have higher profiles at the

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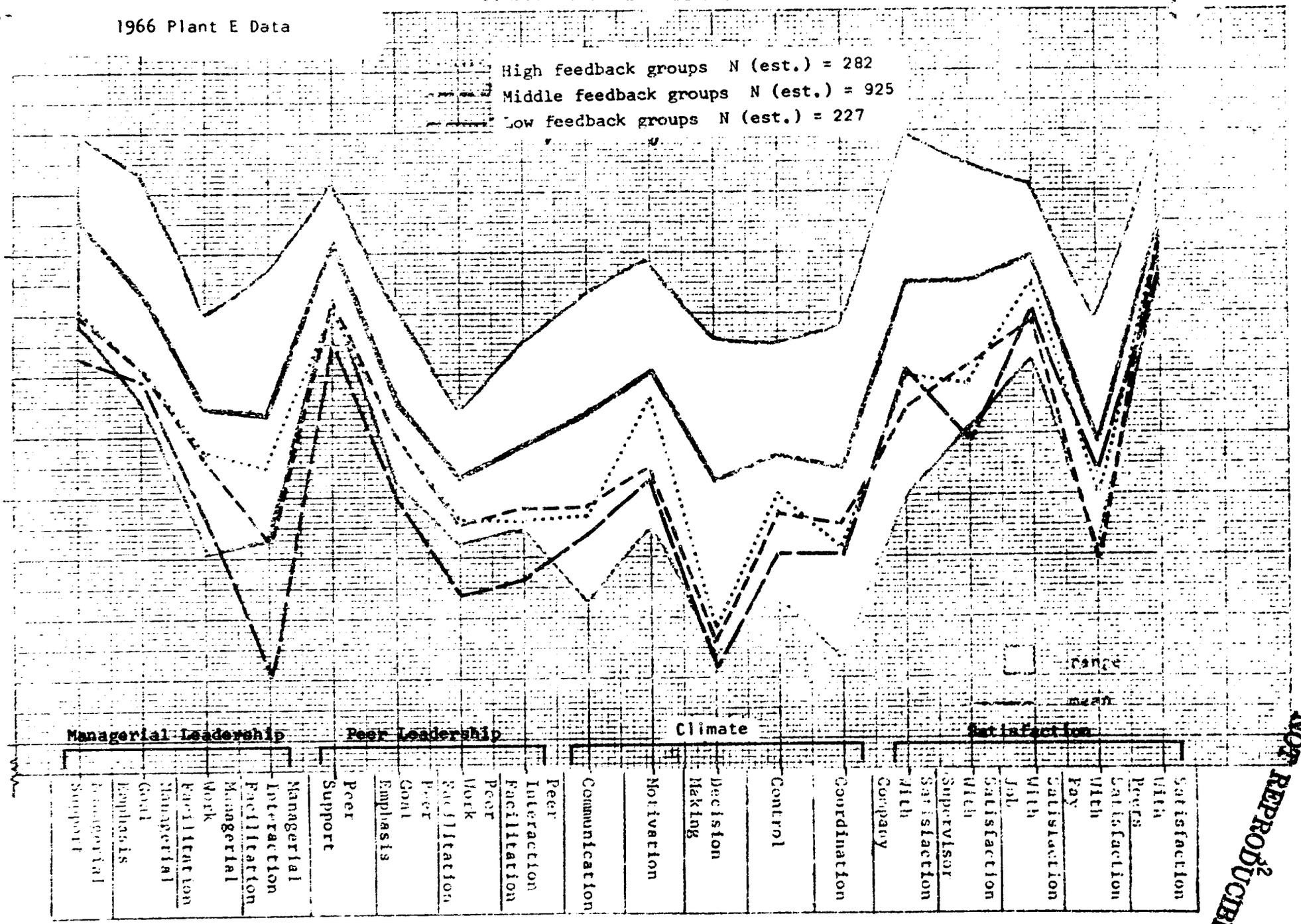
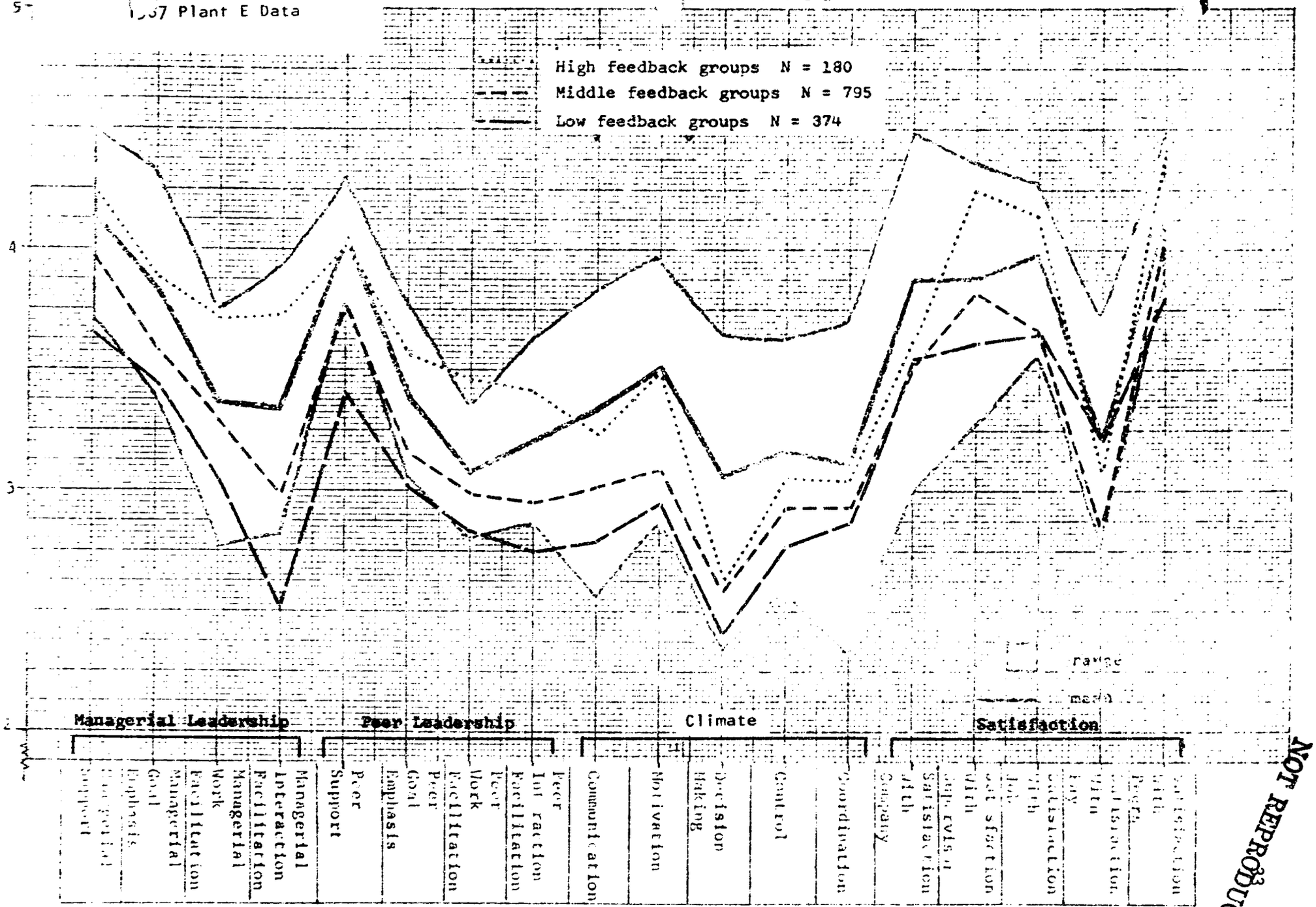
*Judgments were supplied independently by company management personnel.



The range of organizational means and grand mean used here are earlier standards than those used for the

1967 Plant E Data

COMPOSITE ORGANIZATIONAL PROFILE [1]

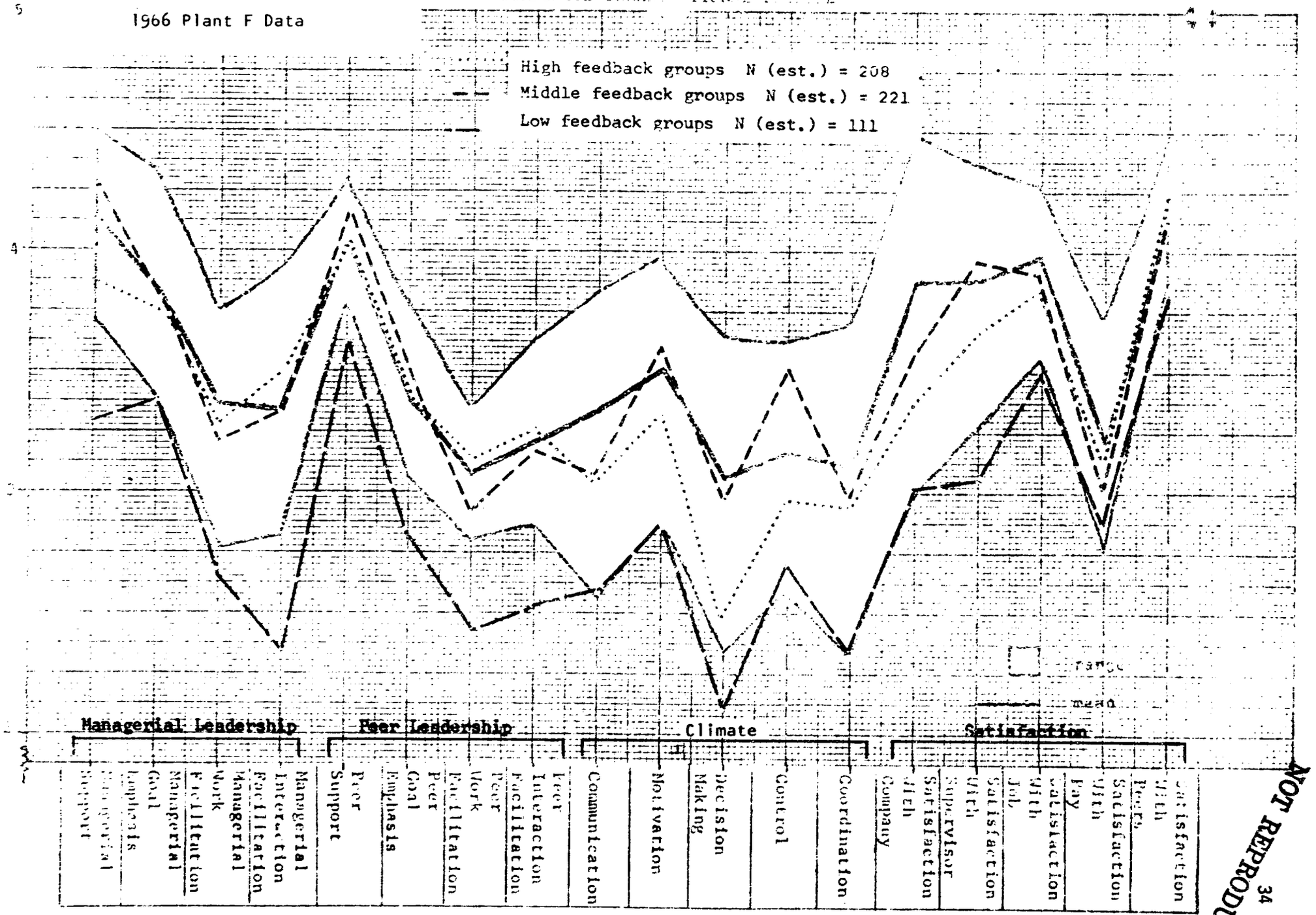


1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

FIGURE 2

COMPOSITE ORGANIZATIONAL PROFILE

1966 Plant F Data



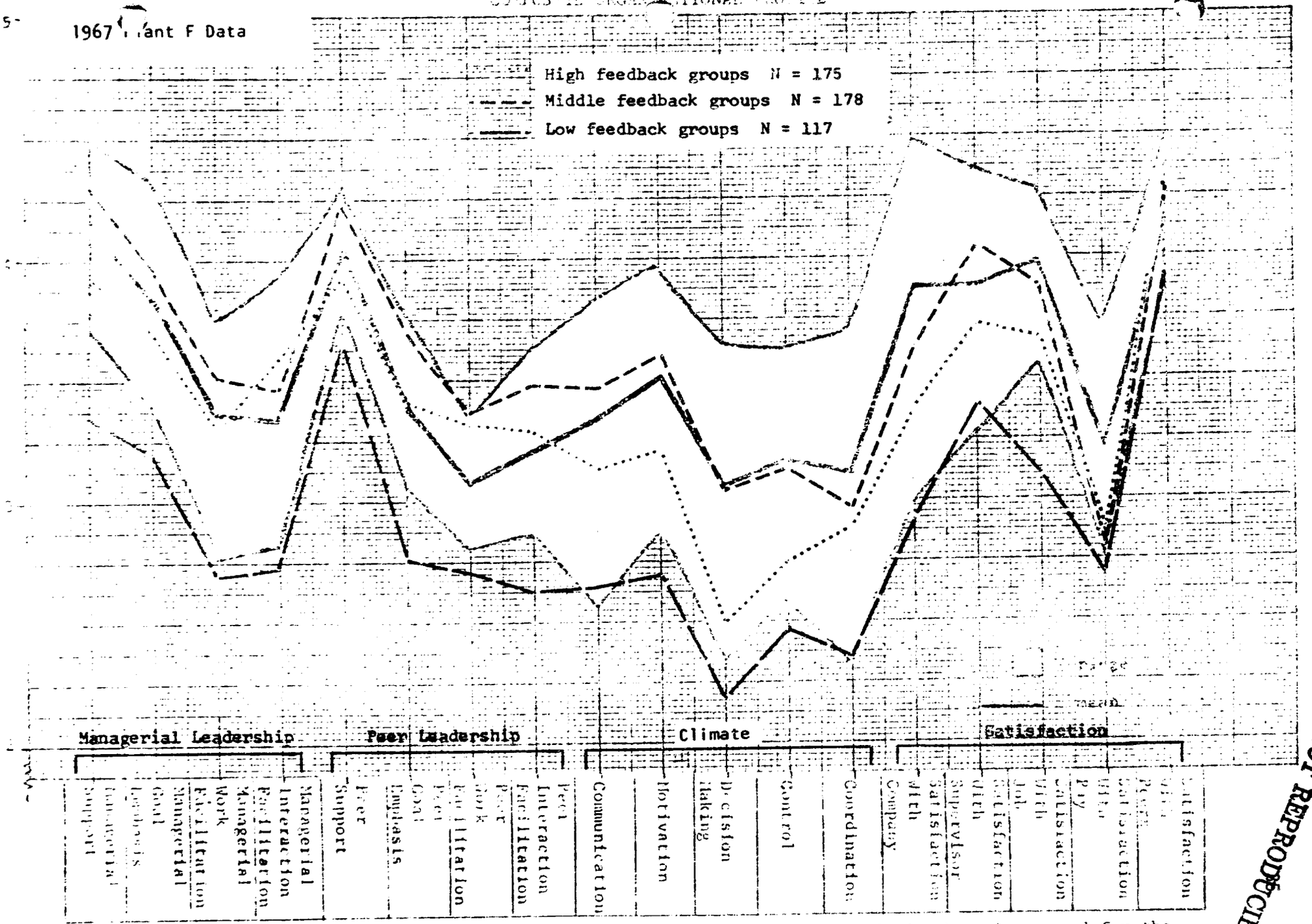
1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

5-

1967 Plant F Data

COMPOSITE ORGANIZATIONAL PROFILE [1]

High feedback groups N = 175
Middle feedback groups N = 178
Low feedback groups N = 117

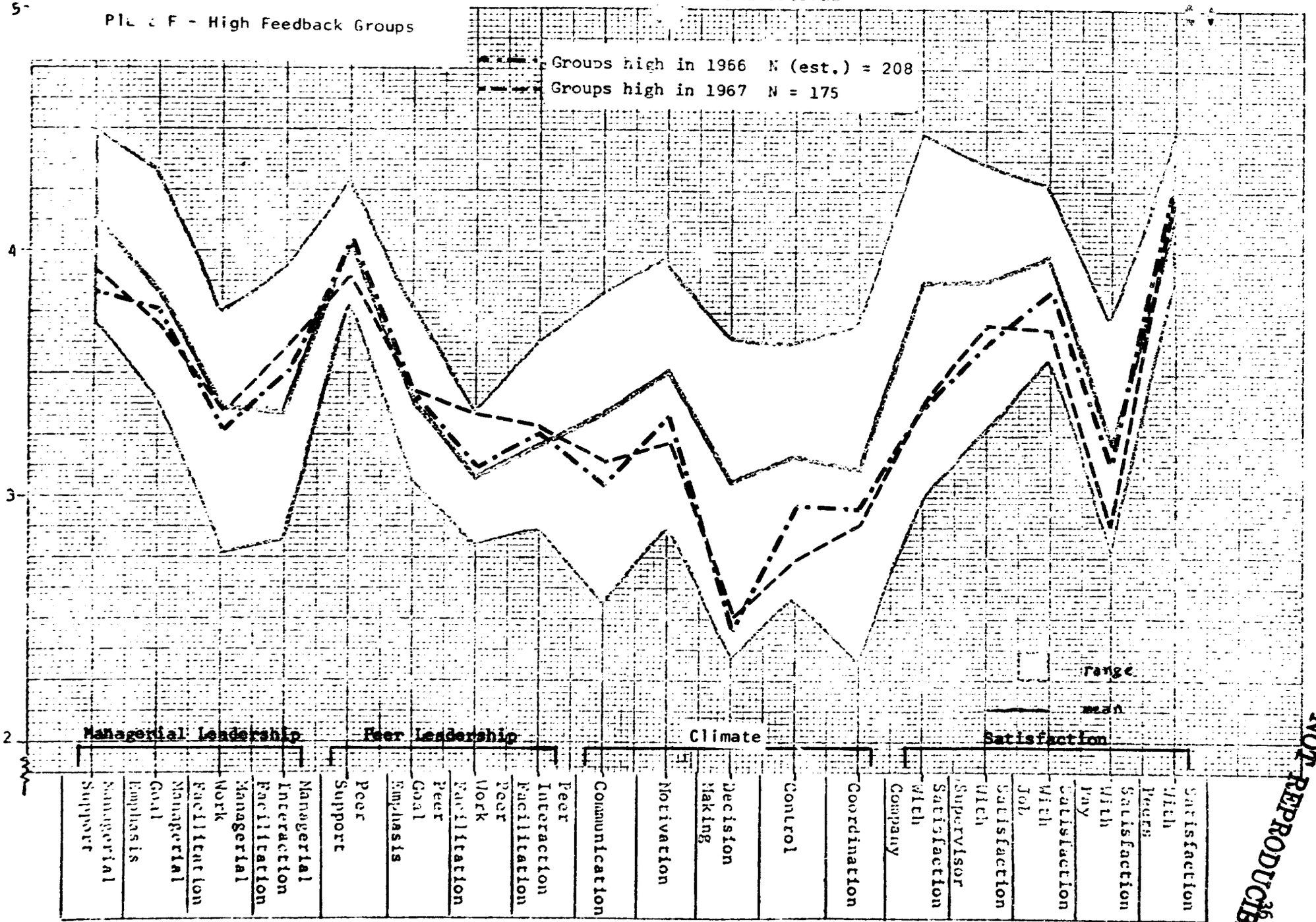


1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

FIGURE 4

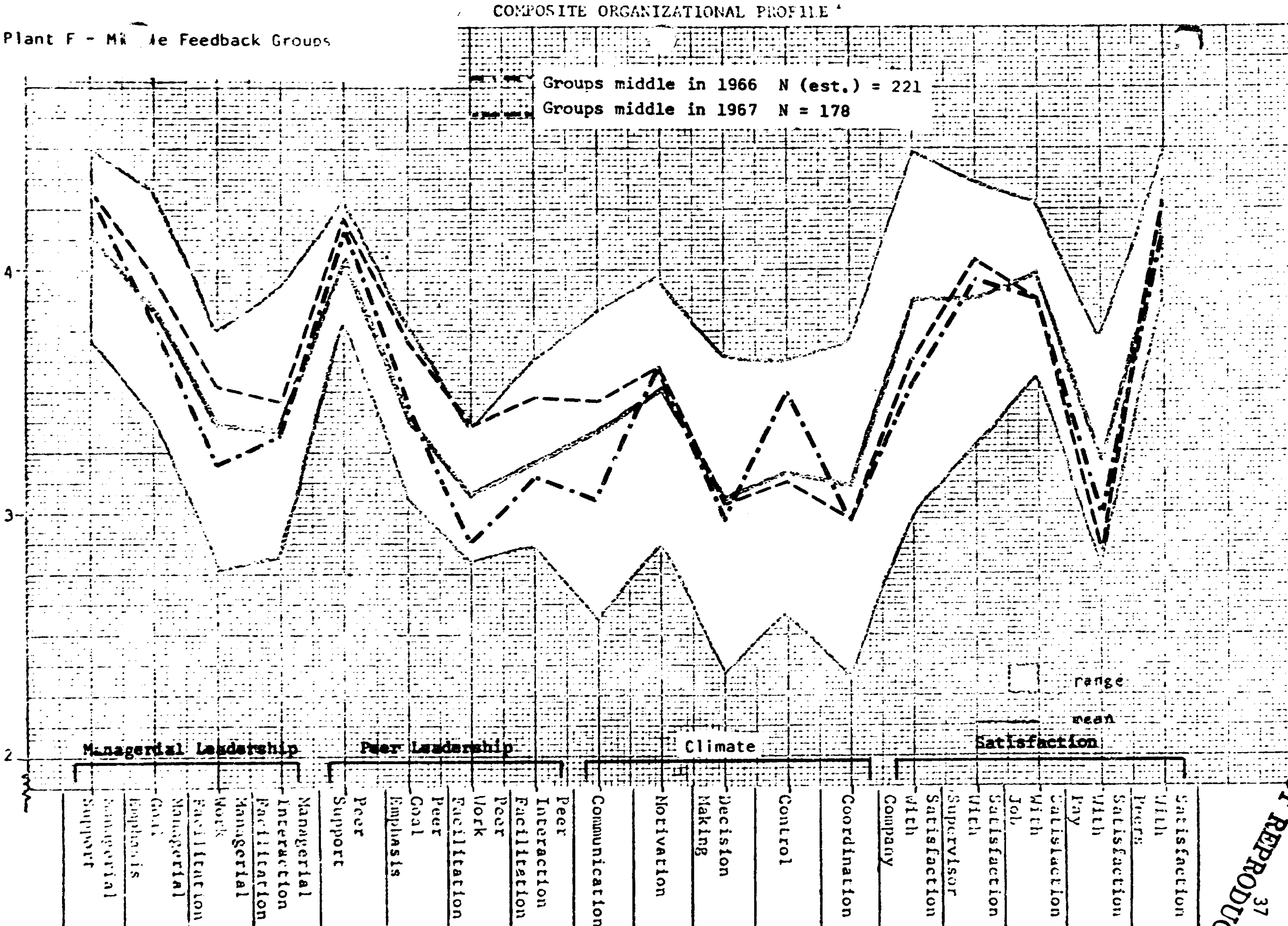
COMPOSITE ORGANIZATIONAL PROFILE [1]

Plot F - High Feedback Groups



1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

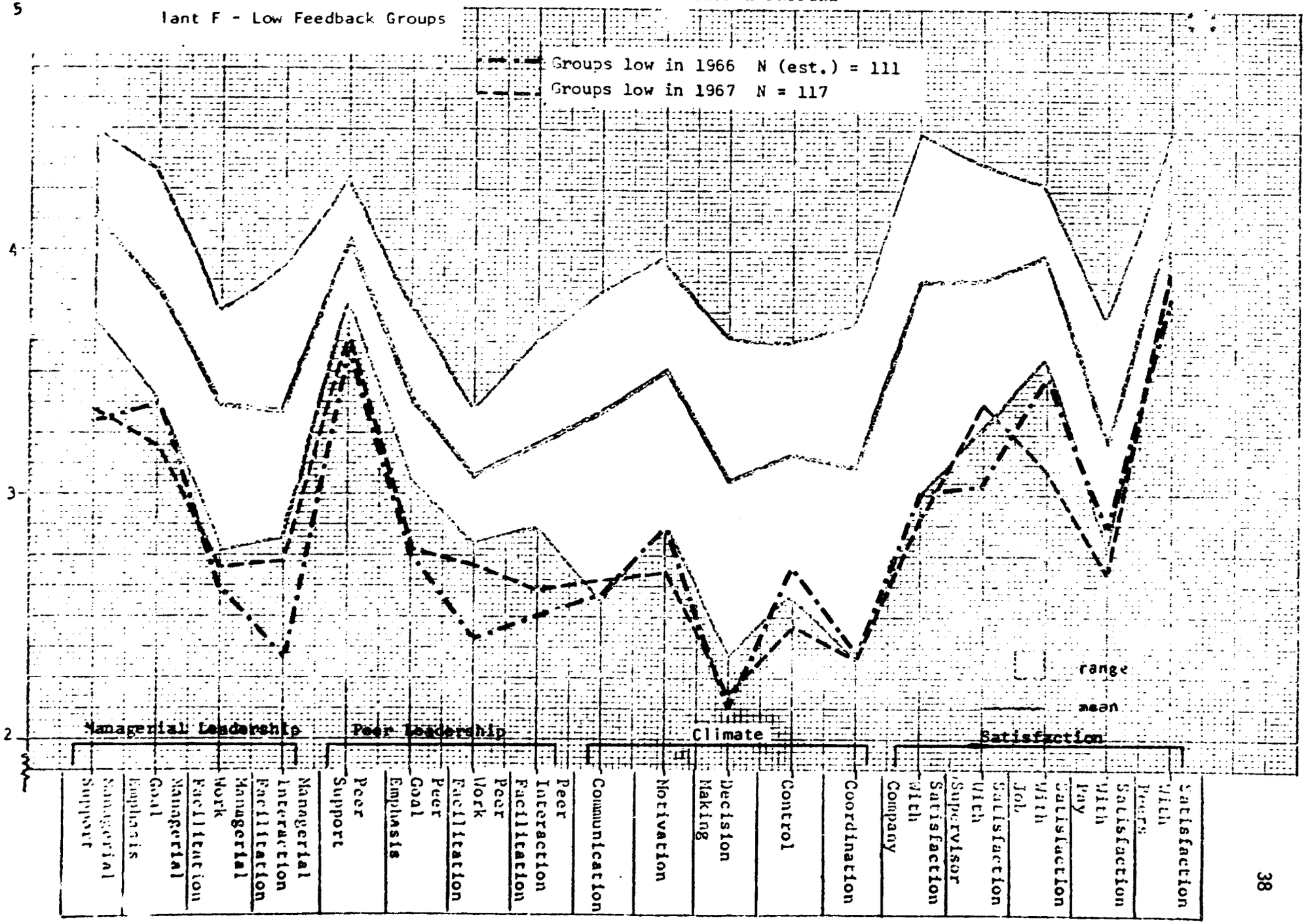
FIGURE 5



1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

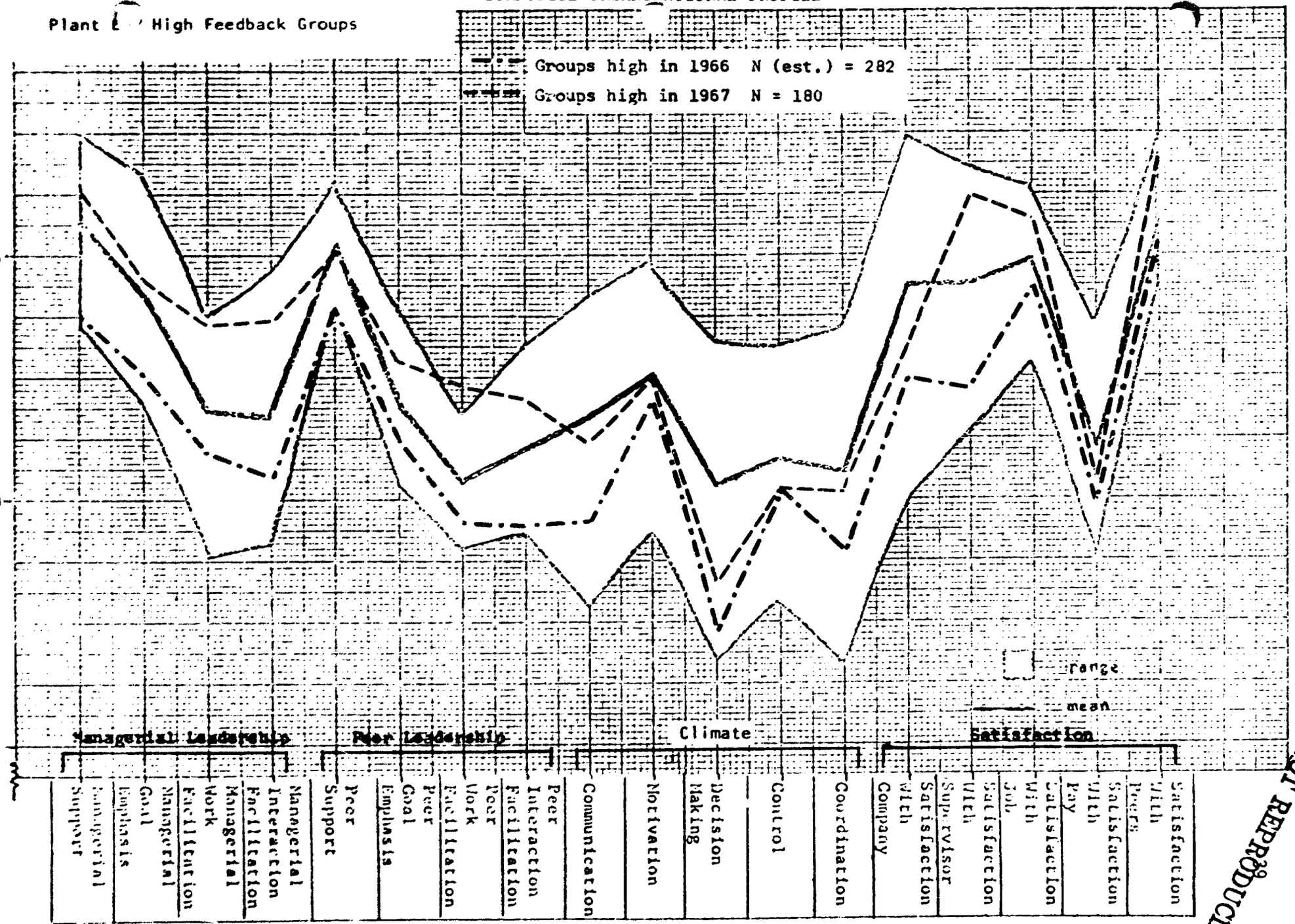
FIGURE 6

COMPOSITE ORGANIZATIONAL PROFILE [1]



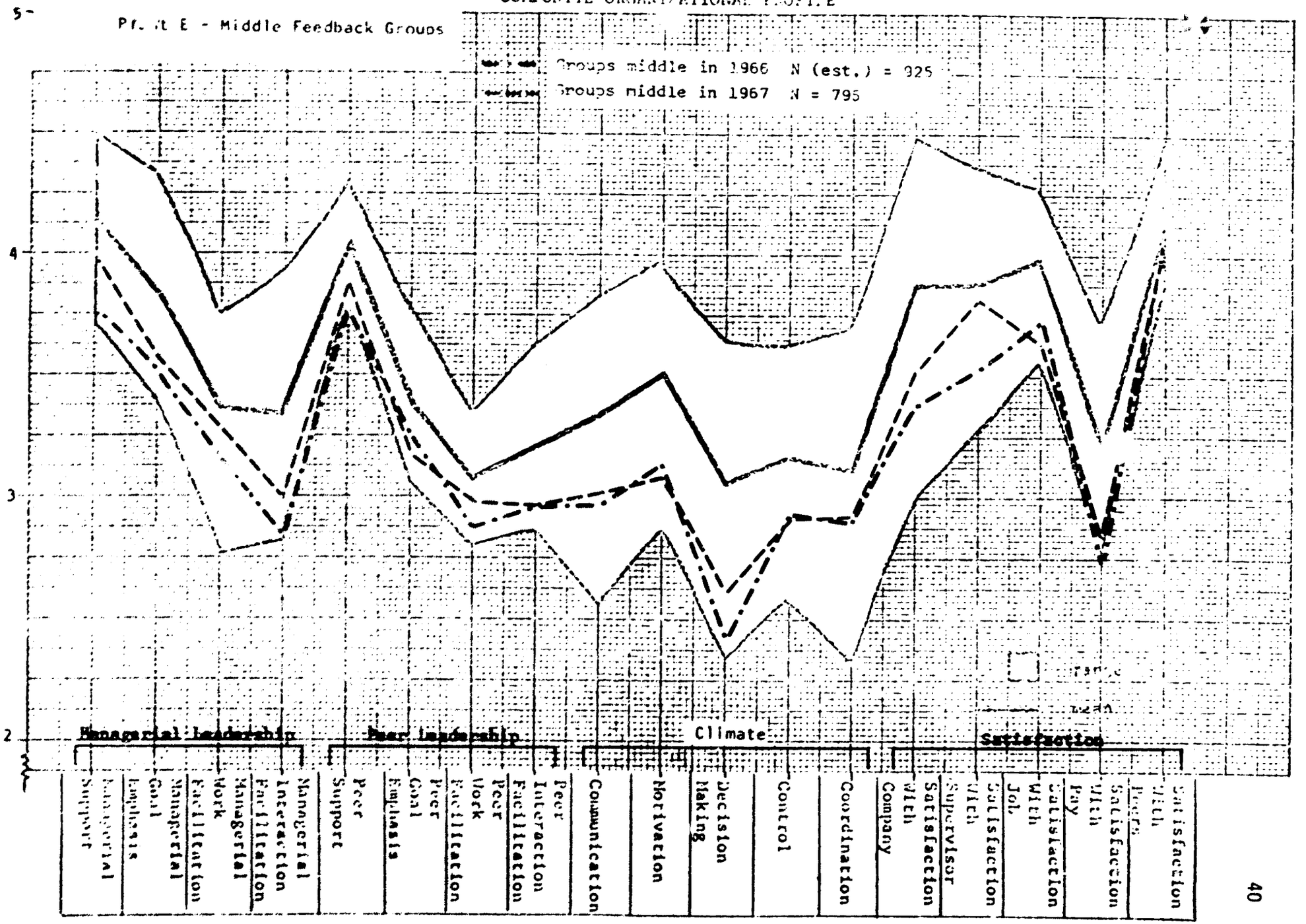
1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

FIGURE 7



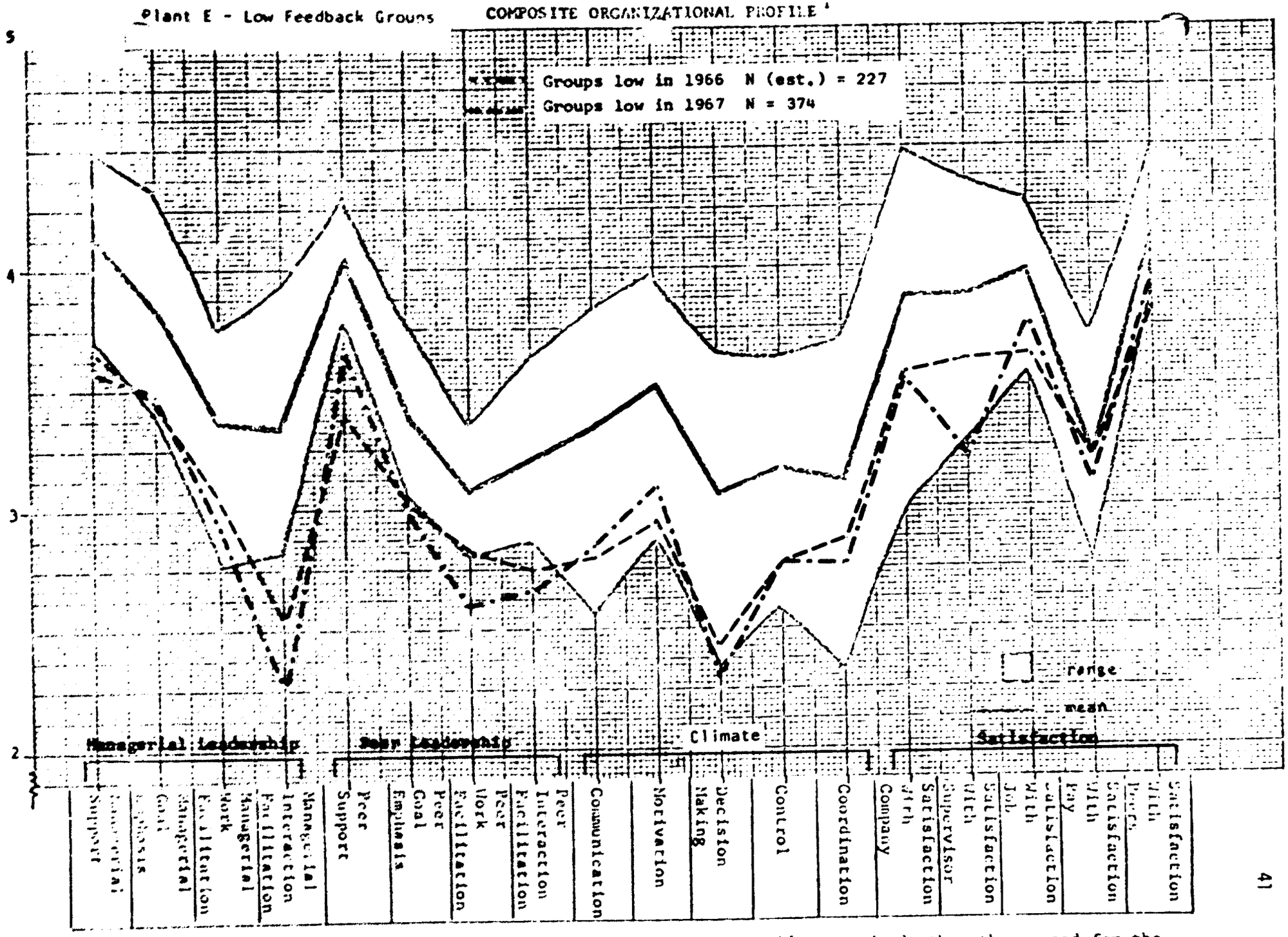
1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

FIGURE 8



1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

FIGURE 9



1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

FIGURE 10

outset. Groups where feedback went least well had, at the outset, the lowest profiles. This tendency becomes even more pronounced in 1967.

In Figures 3 and 4 we see that the picture in Plant F is very different. There the "best" and "medium" feedback groups were in 1966 almost identical in managerial and peer leadership, but the mediums were substantially better off on climate and some satisfaction measures than the "best" groups. By 1967 the medium groups are higher than the "best" groups on leadership measures as well.*

Figures 5, 6, and 7 present 1966 and 1967 curves for each cluster in Plant F separately. From these we see that the "best" groups were not appreciably better off in 1967 than in 1966; in fact, on some measures they were worse. The "low" groups show an even more mixed pattern. Only the medium groups are clearly better off in 1967 than in 1966. Their improvement, it may be noted, is not primarily upon climate measures, but upon managerial and peer leadership.

Figures 8, 9, and 10 present similar curves for Plant E. Here the "best" groups show much more improvement than medium and low groups. The greatest change for Plant E's "best" cluster is, as for Plant F's high-change "medium" groups, upon managerial and peer leadership, and, in addition upon satisfaction with the supervisor and with the job. Again as in the Plant F medium groups, least change occurs upon the context measures. It may also be noted from Figure 1 that the "best" groups in Plant E were, like the medium groups in Plant F somewhat better off in the climate measures to start with.

There is an additional point worth noticing. Where least change occurs (lows in Plant E, "best" and low clusters in Plant F), a common pattern of change occurs. In these clusters there are increases in managerial interaction facilitation, but decreases in managerial and peer support, and either a decrease or no change in motivation and in job satisfaction. Although far from

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*That the medium groups fare better than the "best" may not be entirely surprising. The medium cluster contains most of the staff units, which are more familiar with data and statistics and presumably gain more from feedback for the same effort.

conclusive, this pattern suggests that part of the reason for lack of change from the feedback operation in certain units consists of their having had more meetings, but less well managed.

Results of Team Development Work

To explore the impact of team development work among top management groups in Plants E and F, we need to recall several facts from the diagnostic section and present some additional data.

From the diagnostic section it will be recalled that there were in 1966 no organizational climate problems among top management groups in Plant E, and only one such problem (Coordination) among top groups in Plant F. No new problems and no new strengths were evident in 1967 among these groups in Plant E, whereas several areas of strength were built, and the one problem removed, in Plant F.

On the surface this would appear to suggest that Plant F's heavier involvement in term development work had some substantial impact. There remains the possibility, however, that the picture may look different when all respondents, rather than work groups, are the focus of attention, and when magnitude of change, rather than position in relation to a standard based upon data from a number of companies, is tabulated.

Table 9 presents mean scores and mean change by category for top management groups in the two plants. These data seem to indicate quite clearly that top management in Plant E changed considerably more than did its counterpart in Plant F between 1966 and 1967.

The difference between this picture and that presented in the diagnosis can only mean that the change was more widespread in Plant F top management, but smaller in overall magnitude, larger in Plant E, but concentrated in fewer groups. In fact, a review of the data in detail indicate that this is precisely what happened.

TABLE 9

CATEGORY MEANS, AND MEAN CHANGE FROM 1966 to 1967,
FOR TOP MANAGEMENT GROUPS IN PLANTS E AND F

	Plant E		d	Plant F		d
	1966	1967	(1967-1966)	1966	1967	(1967-1966)
Organizational Climate	3.48	3.98	+.50	3.49	3.65	+.16
Managerial Leadership	3.52	4.17	+.65	3.92	4.16	+.24
Peer Leadership	3.36	3.84	+.48	3.58	3.76	+.18
Satisfactions	4.19	4.38	+.19	4.15	4.10	-.05

The Cost Reduction Program in Plants F and W

The impact which the Cost Reduction Program had upon performance measurement in Plant F has been discussed in an earlier section of the report. Its principal immediate effect upon performance was a cost saving by virtue of reduction in crew sizes in certain units. These immediate cost savings are definite and no doubt have been accurately calculated by the company.

The indirect and long-term impact of a cost reduction program of this type is another matter, however. The long-term cost of such a program is not from those who are no longer with the company and no longer a drain upon its resources. A long-range cost, if there is one, comes instead from the lingering effect which a program has upon the ability and inclination of those who remain to do the required work effectively.

Our data on this issue are meager. We can, for example, look at the performance of work groups that were seriously affected and comparatively unaffected by the cost reduction program, for periods immediately after and considerably after the program was conducted.

To do this, we have arbitrarily selected the months of May, 1967 and May, 1968 as comparison periods, for the following reasons:

(1) It is our understanding that the spring months are the busiest period of the work year in this industry. Selecting a month during this period avoids contaminating performance data by the effects of inter-departmental reassignments during slack seasons.

(2) Standards are recalculated in the fall and instituted in January. Moving into the last half of the year presumably would risk inaccurate standards as real procedural changes accumulated.

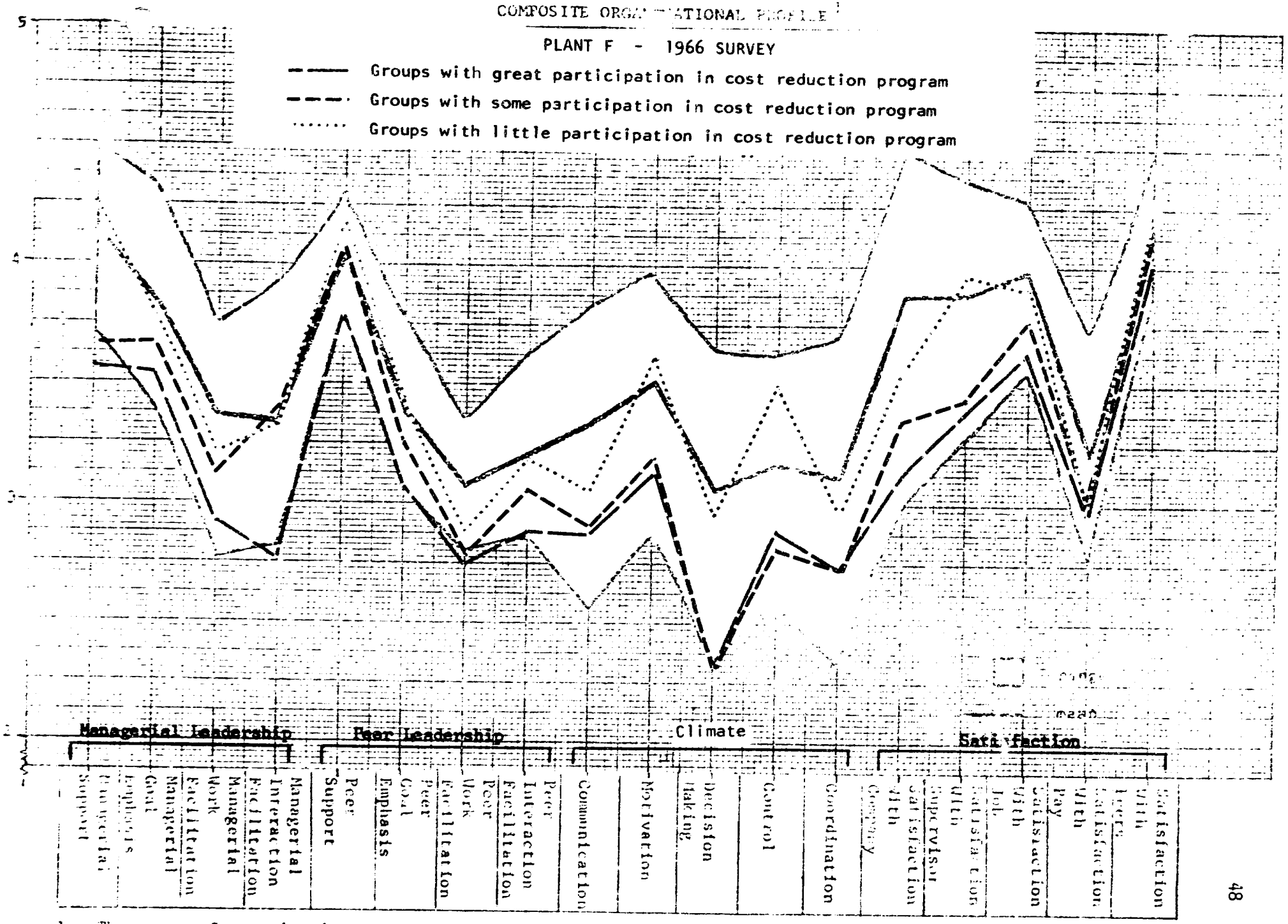
(3) It seemed desirable to select a month as near the present as possible for the post-period comparison.

(4) It appeared advisable to avoid the months of June, July, and August, not only for the reasons presented above, but because of the unknown effects of vacation schedules during the summer.

TABLE 10

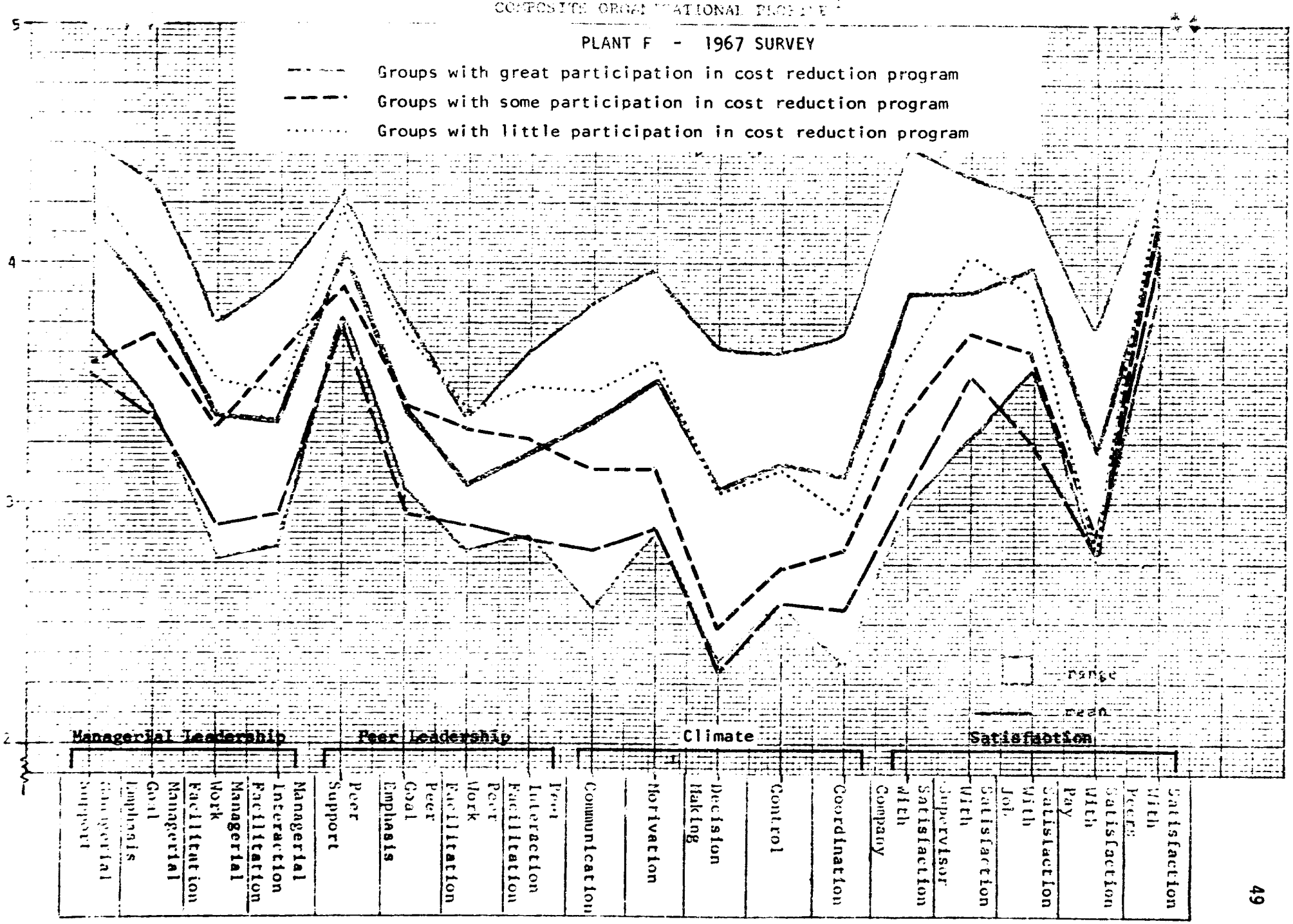
MEAN TOTAL VARIABLE EXPENSE FOR WORK GROUPS
HIGH AND LOW IN IMPACT OF COST REDUCTION
FOR PLANTS F AND W, MAY 1967 VS. MAY 1968

	High CR Groups			Low CR Groups		
	May 1967	May 1968	Change (1968-67)	May 1967	May 1968	Change (1968-67)
Plant F	.97	.89	-.08	.92	.98	+.06
Plant W	1.01	.98	-.03	1.11	.98	-.13



1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

FIGURE 11

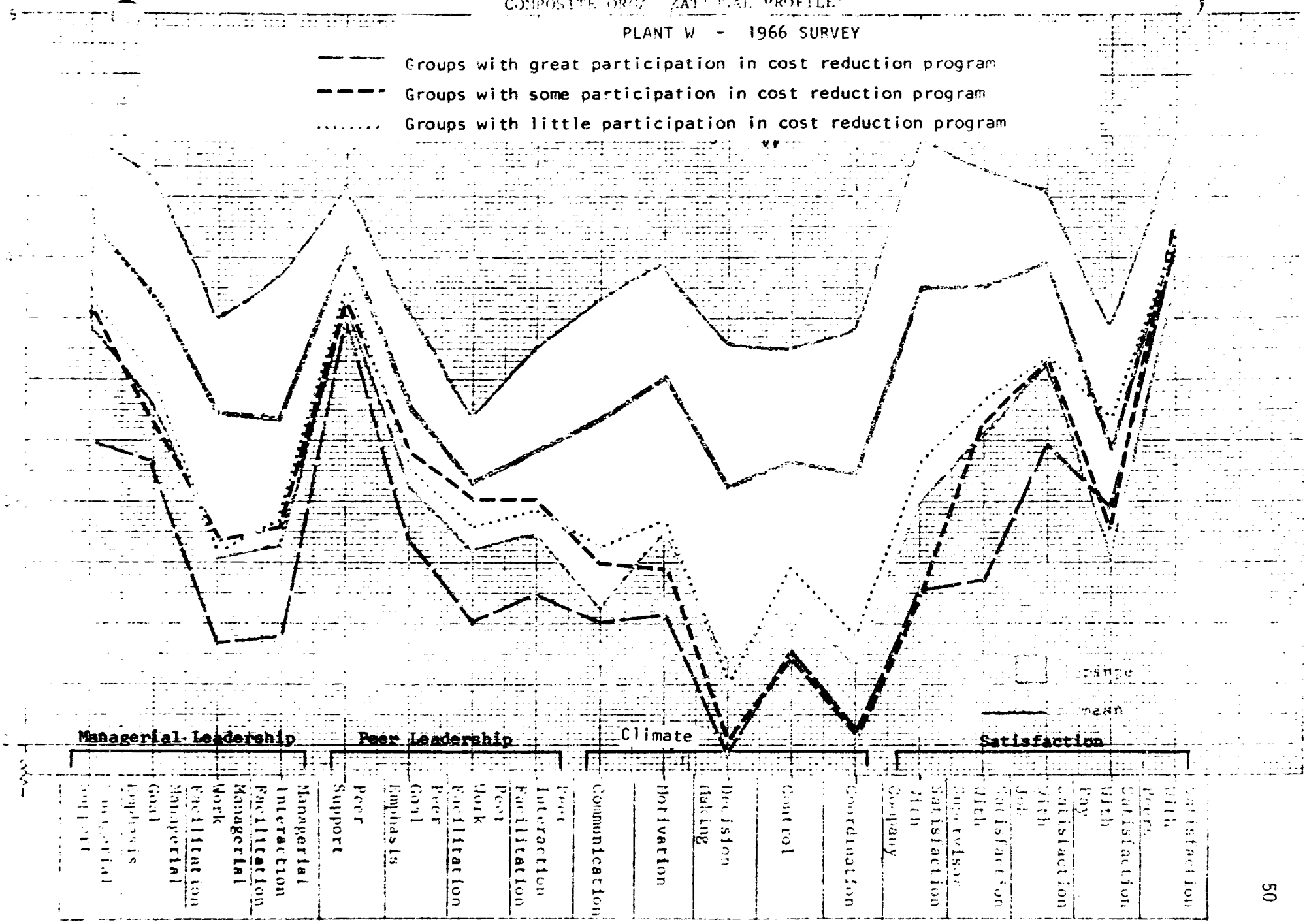


1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

FIGURE 12

COMPOSITE ORGANIZATIONAL PROFILE[1]

PLANT W - 1966 SURVEY



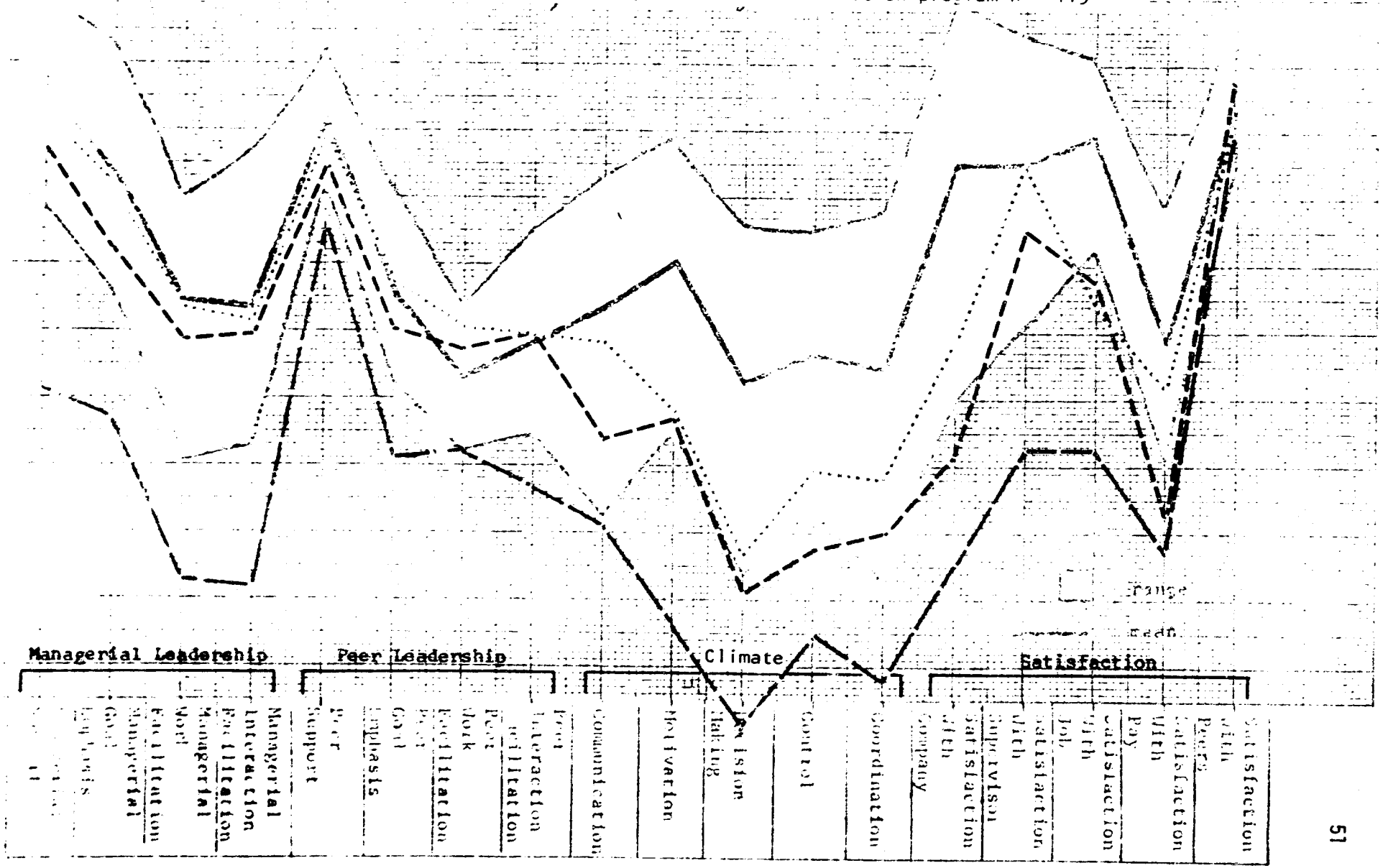
1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

PLANT W - 1967 SURVEY

Groups with high participation in cost reduction program N = 110

Groups with some participation in cost reduction program N = 140

Groups with little participation in cost reduction program N = 113



1. The range of organizational means and grand mean used here are earlier standards than those used for the organizational diagnosis in Section II of this report.

FIGURE 14

HIGH, MEDIUM, AND LOW COST REDUCTION PROGRAM IMPACT GROUPS ON CLIMATE VARIABLES

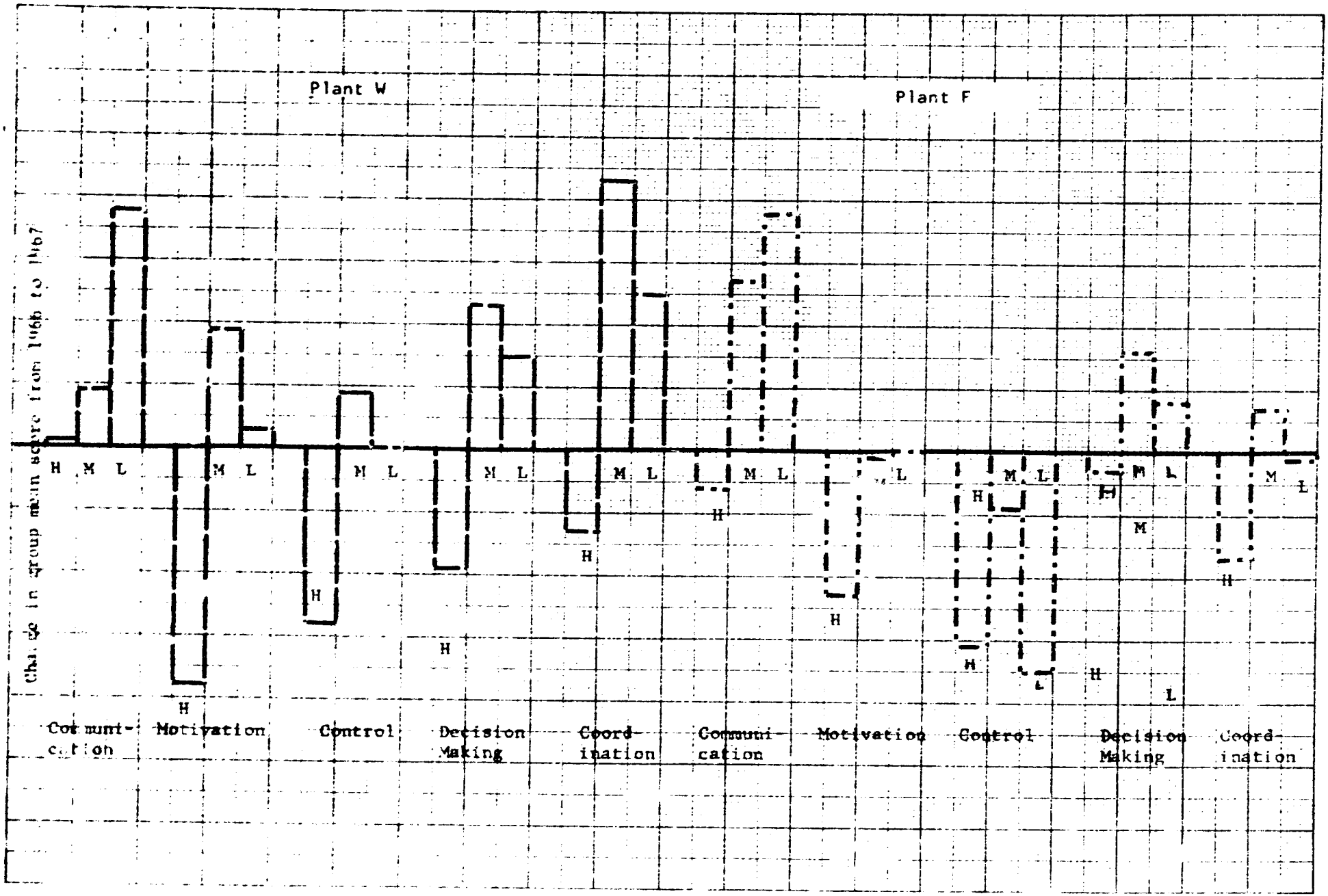


FIGURE 15

HIGH, MEDIUM, AND LOW COST REDUCTION PROGRAM IMPACT GROUPS ON MANAGERIAL LEADERSHIP VARIABLES

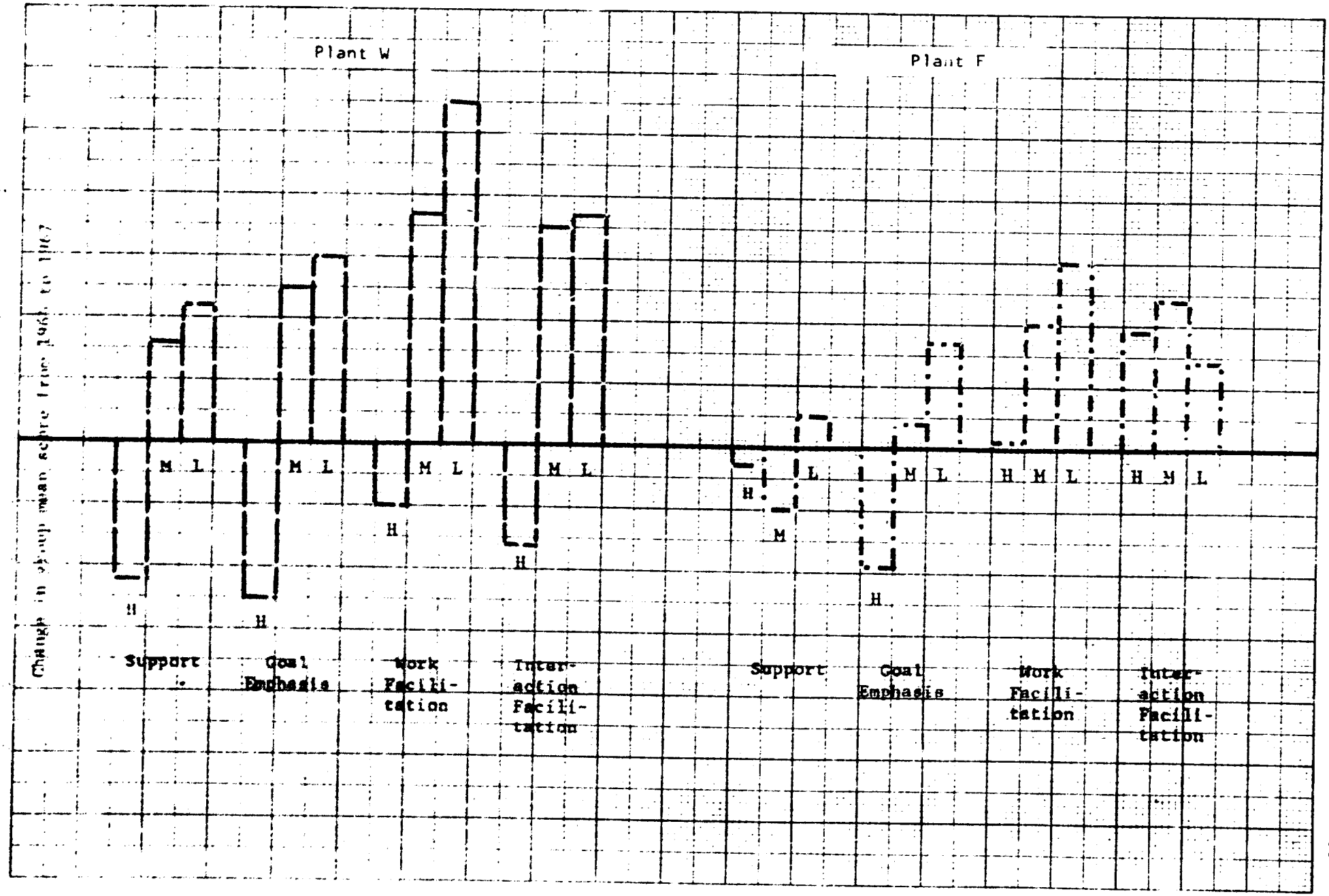
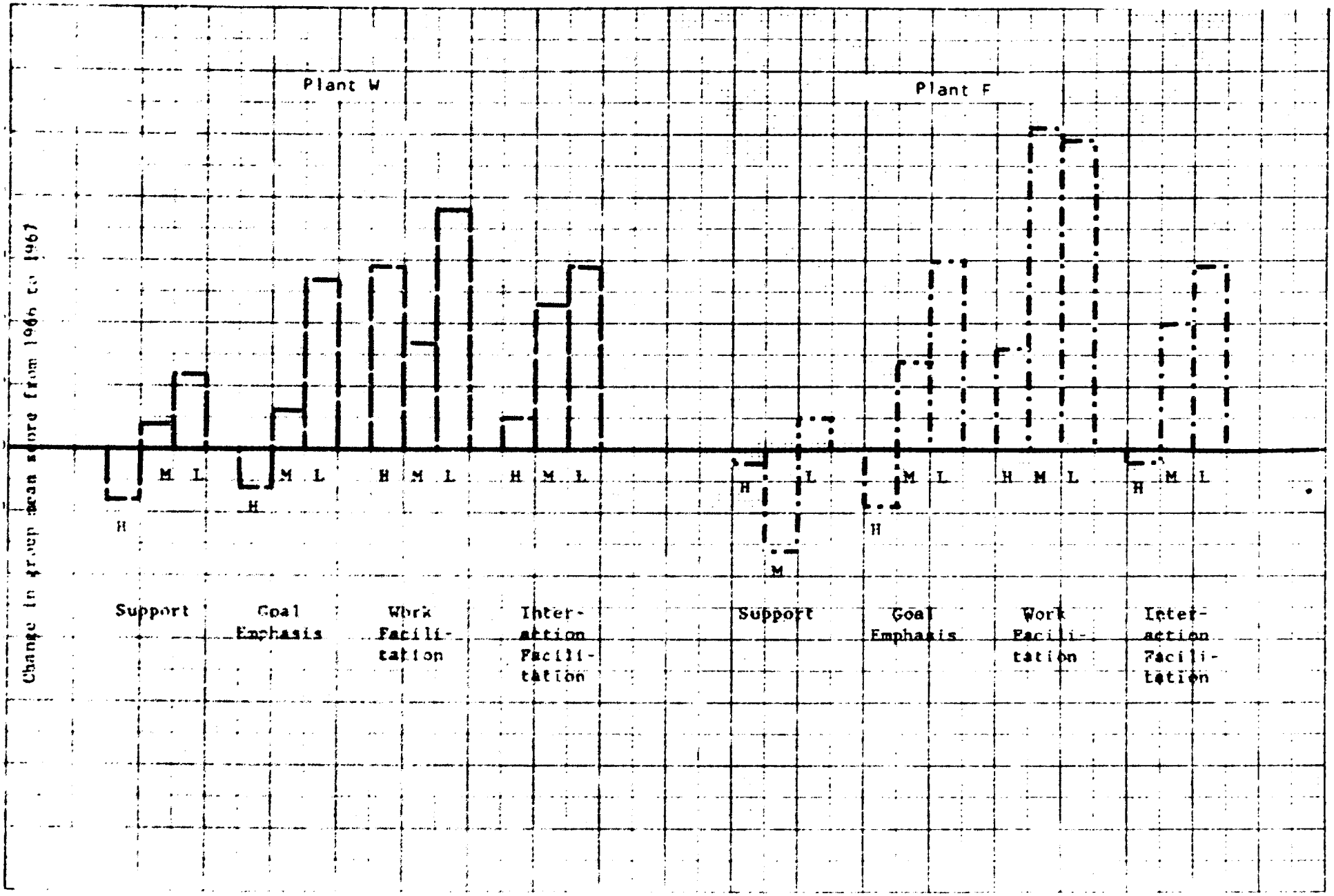


FIGURE 16

HIGH, MEDIUM, AND LOW COST REDUCTION PROGRAM IMPACT GROUPS ON PEER LEADERSHIP VARIABLES



... PROGRAM IMPACT GROUPS ON SATISFACTION VARIABLES

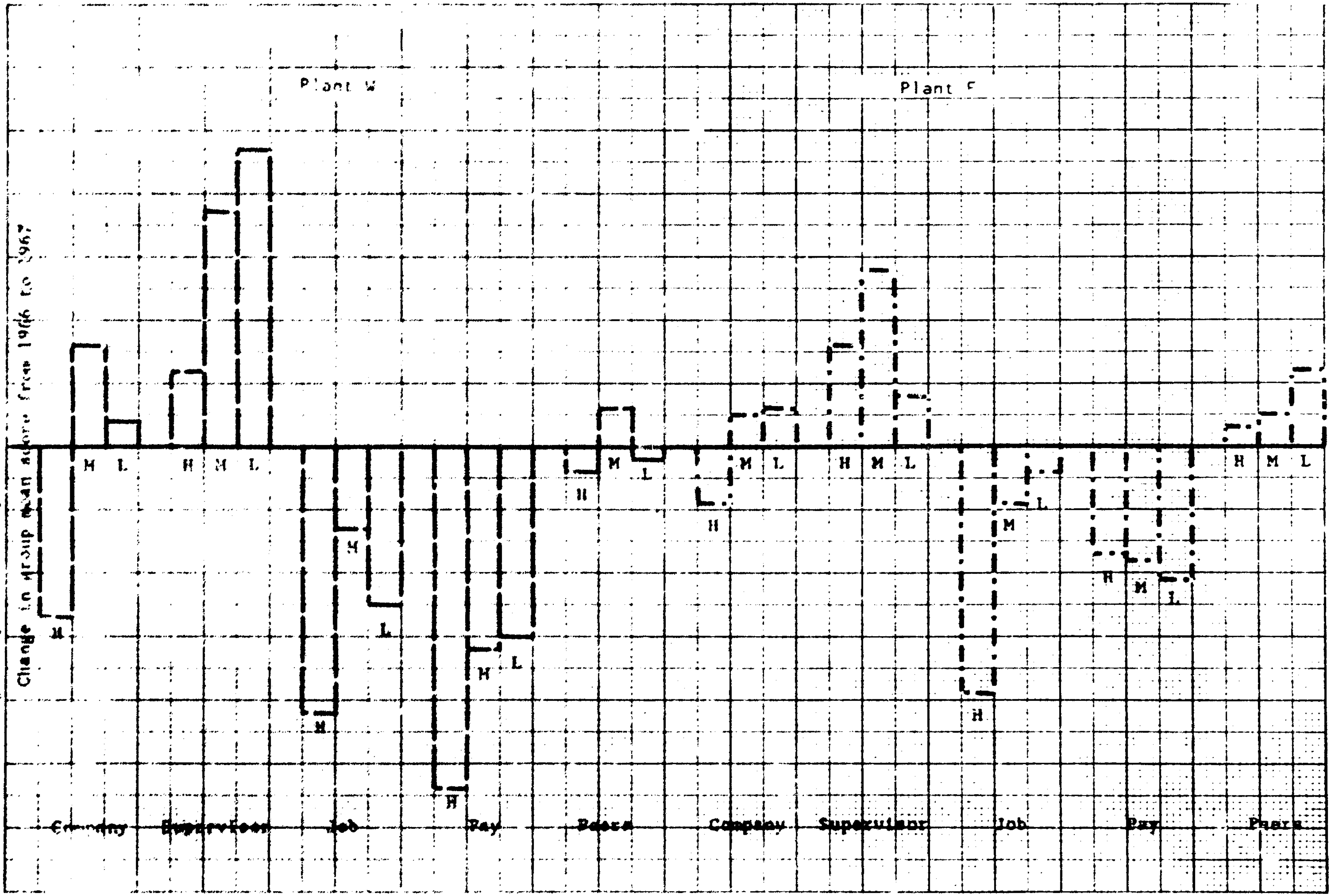


FIGURE 18

Managerial Grid Training

No pure assessment of the impact of Managerial Grid training can be made, since all managers, whether they had this training or not, received data feedback as well. Furthermore, the pattern of attendance within Plants F and W was such that comparisons controlled for position level and department are for all practical purposes impossible. (In Plant F, such a high percentage attended that the remainder cannot be matched in sufficient numbers to permit a comparison. In Plant W, matching per se, rather than attendance proportion, was the problem)

Only 31% of the managers on our 1967 survey roster in Plant E had attended the Managerial Grid, however. This low percentage, plus the pattern of attendance make some assessment in this instance possible, therefore. To do this, we matched as many of those who attended as possible to persons in the same unit and at the same level of responsibility who had not attended the Grid. Table 11 presents the results of significance tests of overall managerial leadership scores (the mean of Managerial Support, Goal Emphasis, Work Facilitation and Interaction Facilitation as perceived by their subordinates) for those who attended and did not attend the Grid. It also presents significance tests of the same scores for the same sample, broken by whether they were or were not in units judged to have handled the survey feedback process well.

It is obvious from these data that managerial leadership improvement was greater for those who did not attend the Grid than for those who did. It is also apparent that whether their departments effectively used survey feedback or not made considerably greater difference than whether they had or had not attended the Managerial Grid.

TABLE 11

SIGNIFICANCE TESTS OF MEAN CHANGE IN MANAGERIAL LEADERSHIP FOR MATCHED SAMPLES OF MANAGERS IN PLANT E

	Change (1967-1966)	+	df	P
Attended the Grid	+.27	2.45	17	.05-.02
Did Not Attend Grid	+.39	3.02	17	.01-.001
Departments Making More Effective Use of Feedback	+.64	6.04	7	.001
Departments Making Less Effective Use of Feedback	+.25	2.46	27	.05-.02

CONCLUSIONS

The data presented in the preceding sections lead to the following conclusions:

(1) The survey measures relate in the predicted direction to cost performance in succeeding months, i.e., the better the survey measures, the lower the costs in future months.

(2) Employees in Plants E and F see their managers, coworkers, and the plant itself as functioning more effectively in 1967 than in 1966.

(3) Employees in Plant W do not share this generally more positive view; in fact, they often see things as worse in 1967 than in 1966.

(4) There is a general parallel between the adequacy with which the feedback process is judged by company personnel to have been carried out and the amount of improvement in survey measures in Plant E and F.

(5) There is a distinct contrast between units highly impacted by the Cost Reduction Program and those least impacted by it. Low impact groups change decidedly for the better on survey data from 1966 to 1967, whereas high impact groups either change negatively or not at all.

(6) Insofar as it can be subjected to a controlled comparison, there is little evidence that attendance at a Managerial Grid session enhances at all the survey index improvement on managerial leadership behavior from 1966 to 1967.

To the extent that changes in the survey data forecast changes in costs or labor relations, these data would appear to be valuable as normal additions to the array of control data which the organization routinely collects and uses.

Second, it is not sufficient that survey data be routinely collected and simply filed. They should, as they were following the 1966 survey, be fed back

and in this way made a development tool for the organization. The survey data feedback technique, developed originally by Floyd Mann, is described in a recent publication in the following way:

> "The presentation of survey findings to the various organizational families sometimes brought new problems to light. More often it gave an objective and factual basis to problems that had either been brushed aside or dealt with by some opinionated gesture. Not only had vague reports about the perceptions and feelings of employees been reduced to facts and figures, but comparisons could be made among similar groups and the findings could be related to possible causal factors. ...And this was the emphasis of the Mann feedback procedure -- group discussion of facts and figures in a task-oriented atmosphere where people were seeking to analyze the problem, identify possible causes as objectively as possible, and agree upon possible solutions. The reason for utilizing organizational families and presenting to them the relevant data about their operations thus becomes clear. The members of a specific organizational family have been involved in these very problems, already know a good deal about them, and know what questions should be asked to dig deeper into the available data for answers. Moreover, the group members are the immediate agents for implementing any policy changes with respect to problems at their own level. If they understand the causes, have been involved in discussion of solutions, and perhaps have proposed the new policy, they will be more effective agents for achieving change."
>
> D. Katz & R. Kahn The Social Psychology of Organizations, pp 418-423

This same publication goes on to summarize the requisites of successful feedback, all of which were met in Plants E and F, but particularly in Plant E:

(1) Serious examination of results should begin at the top of the organization and work its way subsequently downward, since this legitimizes the activity in the eyes of those below.

(2) Material fed back should be relevant to the group involved -- their own data.

(3) Group discussions should be conducted in a factual, task-oriented atmosphere.

(4) Groups at all levels should be given an area of freedom sufficient for them seriously to utilize the information and the process.

(5) There should be a provision for reporting back up the line the outcome of meetings at lower levels.

The clearer picture of change in Plant E, particularly as it parallels the judged adequacy with which the feedback process was carried out, probably reflects the satisfaction of these requirements. Insofar as Plant F presents a slightly less clear picture, it probably stems from (a) a reduction in the area of freedom to utilize the data, caused by the Cost Reduction Program, and (b) the lower degree of formalizing of the reporting back requirement.

Finally, here as in other, previous studies, feedback of survey data shows evidence of being a method of organizational improvement which reaches the great mass of employees in a firm. Other organizational development techniques have, of course, their own unique usefulnesses. Characteristic of most other, however, is that they reach only managers, and often not all managers. Development, to be felt productively in operating records and in labor relations, must be carried to the non-supervisory employees. Survey data feedback is one of the few techniques demonstrated to be successful and comparatively economical in doing so.

CASE II - FEEDBACK OF SURVEY DATA IN A CHEMICAL PLANT

INTRODUCTION

This second study, in one of the plants of a major chemical company, originated when a job enlargement program within a neighboring plant of the same company created in this present plant a desire for change and expanded opportunity. Aware of a development program with which ISR had had some connection in another company, the plant manager visited Ann Arbor early in the fall of 1965 to discuss suggestions for broadening job involvement and opportunity in his plant. This meeting resulted in the suggestion that conditions, like opportunities, reflect the management system in place in the plant. Accordingly, it seemed advisable to collect brief, initial perceptions about the existing system from all plant supervisory personnel.

Following an analysis of these perceptions, a staff member from the Institute's Center for Research on Utilization of Scientific Knowledge visited the plant in February, 1966, to present the results to top management and to discuss what further steps, if any, were warranted. From these discussions, there resulted in April, 1966, an agreement to undertake a formal development study within the plant. An initial questionnaire was then administered to all plant personnel in early May, 1966. Initial feedback of tabulated questionnaire data began the following month and continued for several months during the remainder of 1966. In addition, rather intensive work of a confrontational, or modified laboratory, nature was undertaken over a period of months with the top management and general foreman groups.

Feedback activities were of a type commonly undertaken in this series of studies. The tabulated data (percentage spread, mean, score and standard deviation) for each questionnaire item for the respondents in his work group (and in his total combined area of responsibility for managers above the first-line level) were given to each manager. The data and

procedures for understanding and interpreting them were explained to each manager personally and in written instructional materials. Although it was suggested that he meet with his immediate subordinates to discuss the findings and move from them to problem definition and problem solving, compliance was not forced. It was made clear in presenting the tabulations that both ISR project development specialists and the company industrial relations manager were available and willing to help any manager with his data as outside resource persons. In some cases this offer was accepted, and a member of the staff did sit in on feedback sessions. In other cases, sessions were held without the presence of outside resources.

Top management received, in addition to survey feedback, a great deal of coaching or counseling help. Some of this was highly individualized and took the form of counseling to help an individual manager clarify his problems, opportunities, and his views of himself. Other portions followed a group-oriented, confrontational, sensitivity training format in an effort to aid top management and general foremen develop a degree of team identity and a realistic appraisal of their own strengths and weaknesses. To measure progress in the development program, a repeat questionnaire measure was obtained in May, 1967.

This report analyzes the impact which the development program just described appears to have had upon organizational perceptions, behaviors, and processes in the plant. As in the first case study, we began with an Organizational Diagnosis of the plant in both years, 1966 and 1967.

AN ORGANIZATIONAL DIAGNOSIS OF THE PLANT: 1966 and 1967

The organizational diagnostic procedure used in these studies was described in some detail in the first case study. It will not, therefore, be repeated here. It should be sufficient to our present purposes to recall that the procedure involves comparing each group in the organization to a set of all-companies standards for each of a number of critical indices of organizational health in the areas of managerial leadership, peer leadership, organizational climate, and satisfaction. Groups are then arrayed by tiers and problem streams located. It should be noted that we do not ask respondents to identify "problems;" instead, situations are classified by the diagnostician as problematic when the description of them obtained from respondents falls below a certain level.

In 1966, persons at all levels of the plant felt that lateral communication and coordination of efforts among departments and units were major organizational problems that affected their ability to function effectively. In addition, below the top management level there was a perception that the climate within which they were required to function was detrimental to motivation to work. There were no perceived climate strengths below the very top level, although persons in the very top groups did perceive a strength to exist in upward receptivity to ideas and information and in the total amount control present in the organization. Pulling these characteristics together, we might say that, although the top management of the plant felt that superiors were receptive to communication upward and that there was good control over operations, the view of the overwhelming majority was that the policies and practices of the plant led to poor coordination, an inadequate transmission of necessary information from unit to unit, and a lack of motivation to accomplish the tasks at hand.

Closely related to this, and probably a major cause of these climate problems, managers at the top and upper-middle levels of the plant were perceived to provide too little interaction facilitation (team-building behavior), and managers at the lower levels too little goal emphasis and

work facilitation. Managerial support, although at no level a strength, was not perceived to be a problem.

There were no peer leadership strengths at any level, and definite problems did exist in goal emphasis, work facilitation, and interaction facilitation below the very top management level of the organization.

Satisfaction with the immediate superior, with their pay, and with the job itself were definite problems at all levels below top management, although middle managers felt strongly satisfied with the company.

By 1967, the managerial leadership picture had changed dramatically. There were no longer any areas in which, at any level, managerial leadership was perceived to be a problem. On the contrary, goal emphasis was now viewed as a strength at the top management level, and support a strength at the upper-middle management level.

Closely related to this, certain selective organizational climate changes had occurred. Probably because of the greater degree of goal emphasis on the part of top managers, upper middle managers no longer perceived the climate as motivationally discouraging. Similarly, middle managers now saw upward receptivity to ideas and information as a climate strength, a change undoubtedly related to the improvement in managerial support provided by upper-middle managers.

Problems remained in 1967, however. Lateral communication and coordination were still fairly pervasive problems; motivational climate was still a problem at the bottom levels of the organization.

Among measures of peer leadership, the most dramatic change occurred in peer work facilitation, which was now seen as a definite strength among the top three levels of the organization. A mixed pattern of selective strengths developed at upper levels, although support and goal emphasis were still problems for upper-middle management. There were now seen to be no problems, and no strengths, in the pattern of leadership provided by first-line supervisors, the bottom managerial echelon of the organization.

Satisfaction showed a change related to changes in measures in the other categories. Satisfaction with the immediate superior, which had been a

pervasive problem, was now a pervasive strength. Satisfaction with the job, formerly a problem for all levels below top management, was no longer a pervasive problem. Satisfaction with pay, although showing some selective improvement, remained in 1967 a problem at lower levels of the plant.

The general picture, therefore, is one of substantial leadership change, both managerial and peer, of some slight climate change in certain instances, of increases in satisfaction related to changes in leadership, but of a persistence of certain fairly fundamental organizational climate problems. An interesting question connected to extracting meaning from these findings is whether the pattern which existed in 1966, and the changes which took place between that time and 1967, were fairly universal throughout the plant or occurred differently from one department to another. An analysis of the data separately by department shows that the pattern which existed in 1966 is not greatly different in kind from one to another. What was true of the plant as a whole was fairly widely true of all its departments separately. It is clear, however, that the major part of the beneficial change which occurred from 1966 to 1967 occurred in Production rather than in the other departments, and that it occurred rather generally throughout Production (as opposed to the possibility of its having been concentrated in one or two production areas.)

As we have mentioned above, this beneficial change in the Production department consisted only slightly of an improvement in organizational climate. It consisted largely of an improvement in leadership, both managerial and peer. For Production groups, the greatest improvement occurred for managerial support, managerial interaction facilitation, peer work facilitation and peer interaction facilitation. A smaller, but still significant improvement occurred for managerial work facilitation, peer support, and peer goal emphasis. Least improved was managerial goal emphasis.

RELATIONSHIPS TO PERFORMANCE CRITERIA

The company furnished the following performance measures for each of the plant's cost centers for each month from November, 1965, to November, 1967:

TOTAL VARIABLE EXPENSE - the largest expense figure from each cost center, encompassing all expenses.

DIRECT LABOR COST - the cost of the labor involved in production, but not in the maintenance of equipment.

MATERIALS COST - the cost of the raw materials used in production.

PERCENTAGE OF ABSENCES - the number of employees absent divided by the total number of employees.

VOLUME - pounds of product from each operation expressed as a percent of capacity of the equipment.

The cost figures are all expressed in the form of actual expenditures as a percentage of standard; that is, they reflect the relationship of actual dollars spent to historically established, ideal dollar figures.

After all questionnaire and performance measures had been collected, they were intercorrelated using Pearson product moment correlations. The resulting matrix, pairing each mean item response with the monthly measure of each performance variable, was inspected for significant correlations.

The relationship of cost measures to questionnaire items and indices is puzzling. All behave in much the same, erratic way. Table 1 illustrates the general finding by showing the relationship of a personal background variable, average group member age (obtained from the 1966 questionnaire), to monthly materials costs.

Since one questionnaire measure is related to a sequence of cost measures, variation obviously occurs in the performance measure. (It should be noted that the fact that only one measure of age is used excludes from the realm of possibility the explanation that the group age measure varies from month to month.)

TABLE 1

RELATIONSHIP BETWEEN MATERIALS COST
(AS PERCENT OF STANDARD) AND AVERAGE
AGE OF GROUP MEMBERS

Monthly Materials Cost Measure	Product-moment Correlations to Members' Average Age (1966)
November 1965	-.60
December	-.57
January 1966	.58
February	-.58
March	-.36
April	.37
May	-.59
June	-.57
July	-.14
August	-.54
September	.59
October	.51
November	.49
December	.60
January 1967	-.59
February	.46
March	-.65
April	.20
May	-.30
June	.13
July	-.40
August	-.46
September	-.46
October	-.29
November	-.41

It is, therefore, difficult to comprehend how average age in May, 1966 could place a group among the most effective in December, among the least effective in January, and among the most effective again in February. The opposite is by definition impossible: groups do not become younger or older as a function of materials cost. The only remaining possibility, therefore, is that both are related to a third condition. A careful search suggested that that third characteristic is another performance measure, Volume/Capacity, since, when volume of work done is held constant for all groups, the relationship between average age and costs disappears.

Wild fluctuations are also observed from month to month in the relationship of volume to questionnaire data. In this instance, it appears that the fluctuations are due almost entirely to total plant volume changes that affect some units' work load more than they do others. This differential impact is observed to be related to system excellence (the better the unit, the more it is affected), but the reasons for this relationship are obsure. Since so few units are involved, it may well reflect coincidence.

The cost and volume measures are, therefore, apparently inappropriate as criteria of the comparative effectiveness of operations within the plant. Instead, they are criteria of whole-plant performance, and the plant should more appropriately be compared to other plants like it, a comparison which was not possible within the confines of the study. We conclude, therefore, that we must discard these measures from further consideration in this analysis.

A more appropriate measure of work group effectiveness is absence rate, therefore. When, in fact, we look at the relationship of this criterion measure to questionnaire data, we find that a great number of statistically highly significant relationships occur. If we search both the 1966 and 1967 questionnaire data sets for those items and indices most closely related to absence rate, we find the following:

1966 Questionnaire - Strongest Relationships to Absence Rate	1967 Questionnaire - Strongest Relationships to Absence Rate
Control	Satisfaction with Company
Motivation	Satisfaction with Pay
Managerial Goal Emphasis	Satisfaction with Job
Peer Work Facilitation	Satisfaction with Supervisor

The actual mean correlations of these measures to absence rates during the first half, the second half, and the entire period from November, 1965 to November, 1967 appears in Table 2.

TABLE 2

MEAN SIGNIFICANT RELATIONSHIPS TO ABSENCES

Best Predictor	Mean Significant Product-moment Correlations		
	Absences Nov. 1965-Oct. 1966	Absences Nov. 1966-Nov. 1967	Overall Period
1966 Control	-.47	-.46	-.46
1966 Motivation	-.45	-.48	-.47
1966 Managerial Goal Emphasis	-.46	-.48	-.48
1966 Peer Work Facilitation	-.44	-.43	-.43
Mean, Four Best 1966 Predictors	-.45	-.46	-.46
1967 Satisfaction with Pay	-.58	-.42	-.52
1967 Satisfaction with Company	-.58	-.58	-.58
1967 Satisfaction with Job	-.50	-.40	-.44
1967 Satisfaction with Supervisor	-.56	-.37	-.45
Mean, Four Best 1967 Predictors	-.56	-.45	-.50

A series of sign tests are also possible. (See Tables 3 and 4)

TABLE 3

Relationship of Four Best 1966 Predictors
(Control, Motivation, Managerial Goal Emphasis,
Peer Work Facilitation) to Absences in Two Years (Sign Test)

	A 1966 > 1967 No. of Correlations	B 1966 = 1967 No. of Correlations	C 1967 > 1966 No. of Correlations	Sign Test (Col A vs Cols B+C) p
Where both 1966 and 1967 Correlations are Statistically Significant	10	1	6	>.25
Absences Nov. 1965-Oct. 1966	18	0	8	.10
Absences Nov. 1966-Nov. 1967	23	1	5	<.01
Total	41	1	13	<.01

TABLE 4

Relationship of Four Best 1967 Predictors
(Satisfaction with Company, Pay, Job, Supervisor)
to Absences in Two Years (Sign Test)

	A 1966 > 1967 No. of Correlations	B 1967 > 1966 No. of Correlations	Sign Test (Col A vs Col B) p
Where both 1966 and 1967 Correlations are Statistically Significant	2	0	-
Absences Nov. 1965-Oct. 1966	0	21	<.01
Absences Nov. 1966-Nov. 1967	9	20	.10
Total	9	41	<.01

Relationships of these two sets of best predictors to each other, across the two years, and to their counterparts in the other year, are also of interest. (See Tables 5, 6, and 7.)

TABLE 5

Relationship of 1966 and 1967 Counterpart Measures to 1966 and 1967 Best Predictors

Variable	Product-moment Correlations to Counterpart in Other Year
1966 Control	.18
1966 Motivation	.38*
1966 Managerial Goal Emphasis	.36*
1966 Peer Work Facilitation	.38*
1967 Satisfaction with Pay	.36*
1967 Satisfaction with Company	-.02
1967 Satisfaction with Job	.11
1967 Satisfaction with Supervisor	.35*

*Significant at .05 level

TABLE 6

Product-moment Correlation
of 1966 to 1967 Best Predictors

		1966 Best Predictors			
		Control	Motivation	Mgr. Goal Emphasis	Peer Work Facilitation
1967 Best Predictors	Satisfaction with Pay	.35*	.04	.23	.12
	Satisfaction with Company	.11	.13	.17	.12
	Satisfaction with Job	.13	.16	.18	.09
	Satisfaction with Supv.	.19	.21	.22	.12

*Significant ≥ .05 level

TABLE 7

Product-moment Correlation of 1966 to 1967
Counterparts of Best Predictors in Alternative Year

		1967 Counterparts of 1966 Best Predictors			
		Control	Motivation	Mgr. Goal Emphasis	Peer Work Facilitation
1966 Counterparts of 1967 Best Predictors	Satisfaction with Pay	.12	.35*	.08	.27
	Satisfaction with Company	.02	.35*	.18	.24
	Satisfaction with Job	-.22	-.10	.11	.24
	Satisfaction with Supv.	-.01	.03	.08	.09

*Significant at .05 level

Several points are obvious from these data:

(1) Climate and leadership measures in 1966 are somewhat more consistently related to climate and leadership measures for 1967 than are Satisfactions in 1967 related to Satisfactions in 1966.

(2) 1966 climate and leadership measures are about equally related to absences in both years, whereas 1967 satisfaction measures relate more closely to absences in 1967 than to absences in 1966.

(3) Climate and leadership measures in 1966 are almost entirely unrelated to satisfaction measures in 1967.

Taken together, these findings suggest a rather unusual, but plausible and stimulating interpretation. When viewed across time, we find that climate and leadership at an earlier period relate strongly to absence rate in the later, as well as the earlier, period. Satisfactions, on the other hand, which are commonly thought to be affective antecedents of absence, in the present instances relate to the latter only in the second period. It would appear reasonable, therefore, to conclude at least tentatively that in this situation absence is directly caused by climate and leadership--the ingredients of the management system. Satisfaction, on the other hand, appears to be a confirmatory reaction to the facts of climate, leadership, and absence, not a cause of absences.

The importance of these absence findings can scarcely be understated. They suggest very strongly that palliative approaches to employee dissatisfaction are doomed ultimately to fail, since dissatisfaction is, at least in this instance, a "bringing into attitudinal line" of alienation behaviors resulting from the management system. It is not a cause of absences.

WHAT THE OBSERVED DEVELOPMENT REFLECTS

As described in an earlier section of this report, organizational diagnosis is a procedure for analyzing problems and development in relation to all-companies standards. It involves a comparison with what is in general true in other companies, rather than an evaluation of amounts of change against a standard of the organization's own earlier data.

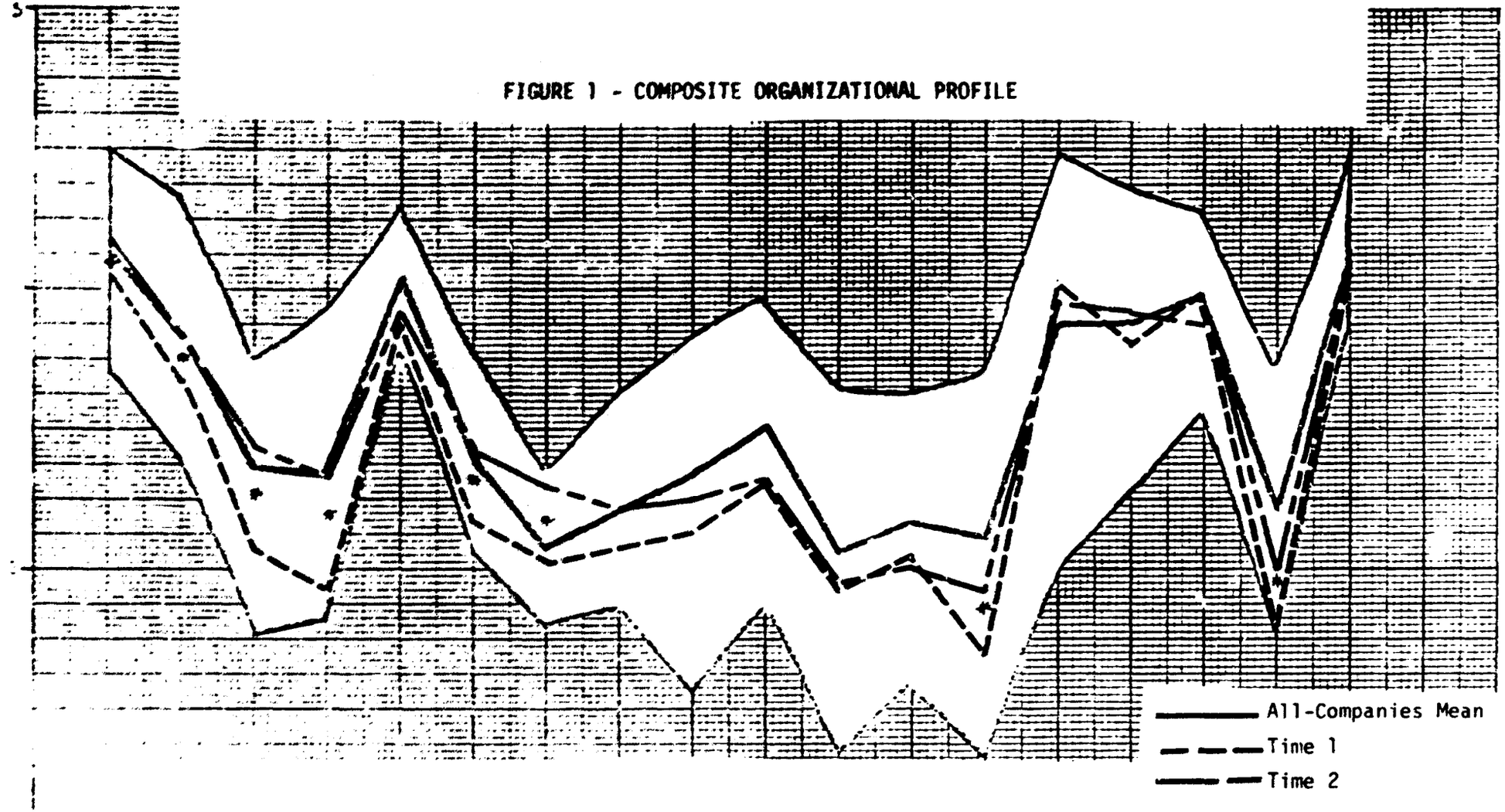
Some assessment of the latter can be obtained by looking at a profile chart, however. Figure 1, which presents such profiles, confirms in general the impression gained from the diagnosis, that the greatest problems in 1966 in the plant as a whole were in certain leadership areas (particularly Managerial Work Facilitation and Managerial Interaction Facilitation) and certain areas of climate (particularly Interdepartmental Coordination). It confirms also that the greatest changes by 1967 had occurred in the managerial and peer leadership areas.

Considering the time and effort invested in producing the observed changes, it seems potentially useful to probe further into the precise locations of change, as well as to determine something about its character. Pursuing this at a very general level, some added insight occurs when we relate the core profile in 1966 to change in the core profile by 1967. Specifically, when we correlate (Rho, the Spearman rank-order coefficient) the 18 1966-indices for the total plant with the changes that occurred in those indices by 1967, we find that the lower the original index score, the greater the positive change by 1967 ($P=.56$, $p=.01$).

Considering the profiles and the all-companies standards jointly, we can correlate the distance in 1966 of the 18 indices below the all-companies standards with the amount of positive change each showed by 1967. When we do this, we find that the lower the 1966 index score in relation to the all-companies standard, the greater the positive change ($P=.61$, $p<.01$).

THESE TWO FINDINGS SUGGEST THAT CONDITIONS IN THE PLANT CHANGED IN A FAVORABLE DIRECTION IN DIRECT PROPORTION TO THE EXTENT TO WHICH THE DATA REVEALED THEM TO HAVE BEEN DEFICIENT IN 1966.

FIGURE 1 - COMPOSITE ORGANIZATIONAL PROFILE



Managerial Leadership	Peer Leadership	Climate	Satisfaction
Managerial Interaction Facilitation	Peer Interaction Facilitation	Communication	Satisfaction With Peers
Managerial Work Facilitation	Peer Work Facilitation	Motivation	Satisfaction With Pay
Managerial Goal Emphasis	Peer Goal Emphasis	Decision Making	Satisfaction With Job
Managerial Support	Peer Support	Control	Satisfaction With Supervisor
		Coordination	Satisfaction With Company

Based upon organizational means for over 6000 people in 10 organizations

FIGURE 1

The development program attempted to impinge directly upon managerial behavior. It seems important, therefore, to look at this impingement in some detail. Several "causes" may be imagined.

1. Managers may have changed their leadership in proportion to its having been deficient in 1966. This can be tested by examining the relationship between actual leadership scores in 1966 and the change in those actual scores by 1967. When we do this, we find a significant relationship ($P=.82$, $p<.01$).

2. Managers may have changed their actual leadership in proportion to the extent to which it deviated downward from ideal scores in 1966. This can be tested by examining the relation of the difference between actual and ideal item scores in 1966 to the change in actual leadership item scores from 1966 to 1967. When we do this, we also obtain a significant relationship ($P=.64$, $.05>.01$).

3. Managers may have changed their leadership in proportion to the change in leadership preference of their subordinates. This can be examined by testing the relation, for all leadership items, of the change in actual leadership to the change in ideal leadership. When we do this, we also find a significant relationship ($P=.56$, $.05>p>.01$).

4. Managers may have changed their leadership in proportion to what they found the original 1966 ideals to be. This can be tested by relating the change in actual scores on leadership items to ideal scores obtained in 1966. When we do this, we find a somewhat smaller, significant relationship ($P=.45$, $p>.05$).

THE EVIDENCE IS STRONGEST, THEREFORE, THAT MANAGERS CHANGED THEIR LEADERSHIP ON THE BASIS OF ITS ORIGINAL DEFICIENCIES AND OF ITS DEVIANCE FROM EXPRESSED IDEALS. EVIDENCE IS WEAKEST THAT THEY WERE "SIMPLY KEEPING UP" WITH IDEALS OR THAT THEY CHANGED SOLELY ON THE BASIS OF EXPRESSED IDEALS.

Looking at leadership data for general foremen's integrations (tabulations for entire areas of responsibility) indicates that this same "tailoring to fit"

occurred for whole areas as well; that is, whole departments of managers seem to have changed their leadership styles selectively, paying greatest attention to areas of exposed collective weakness.

Before concluding too definitively that managers in the plant responded selectively to a tabulation of their data, an alternative hypothesis should be explored--that the changes simply reflect a statistical artifact known as "regression toward the mean."

On the surface, some evidence suggests this. Of the plant's 18 core indices, 14 either did not change appreciably or changed more toward the plant's 1966 all-profile mean (sign test p=.05). Of these same 18, 15 either do not change appreciably, or move toward their all-companies means (sign test p=.01). Furthermore, the plant's all-profile mean moves closer to the all-companies all-profile mean.

This neat pattern of regression becomes cloudy, however, when we cross-compare these two movements:

4/18 move toward the all-companies index means, but away from the plant's 1966 all-profile mean.

3/18 move toward the plant's 1966 all-profile mean, but away from index means.

7/18 move toward both.

4/18 do not move at all.

Finally, something must be said about the regression phenomenon itself. It is a statistical characteristic, not a causal force. Stated perhaps too simply, it says the following: if one wishes to predict something from something else on the basis of a bivariable distribution of a large number of cases, the best prediction will be closer to the mean of the dependent variable than the predictor score is to the mean of its distribution. And this is <u>all</u> it says. It is not a personality characteristic nor a response set, nor any other form of causal force in the real world. It does not <u>produce</u> more mediocre responses. And even where it applies (statistical

prediction) it says nothing about any single case, but only about the average instance from among a great number.

For all of these reasons, we feel reasonably safe in concluding that the 1966-1967 change in this plant cannot be explained by "regression toward the mean."

HOW AND WHERE THE DEVELOPMENT OCCURRED

Still looking at the target of the development program's direct impingement (that is, managerial leadership), it seems appropriate to ask two questions: (a) how much of the change occurred at various levels of the organization and (b) how much of the change must be attributed, not to development itself, but to personnel replacement?

To answer these questions, we divided the change for each managerial leadership index into that part which was attributable to supervisors and managers present in both 1966 and 1967, and that other part which was attributable to persons present in 1966, but not 1967, or vice versa. Tables 8-11 show for the four managerial leadership characteristics, the percentage of overall plant change that can be attributed to each of the two kinds of change for each level of the organization. From these figures we see that approximately 2/3 of the change in Managerial Goal Emphasis, Managerial Work Facilitation and Managerial Interaction Facilitation represents real behavioral change, more of it at the foreman than at the general foreman level. Over 80% of the change in Managerial Support, however, represents personnel replacements at the foreman level. Only the general foreman level reflects any real behavioral change on this dimension.

Because these percentage-of-total attributions might be misleading (there are, after all, more formen than general foremen, more of both of these than top managers), certain other calculations seem advisable.

Table 12 shows for the four managerial leadership characteristics, the percentage change-per-supervisor in each tier. In terms of behavioral change-per-supervisor, general foremen showed the greatest change, top managers displayed the least change, and foremen fell between them. (Only those supervisors present in both 1966 and 1967 are considered.)

An additional calculation (change-per-man in the unit) presents an identical picture. (See last column, Tables 8-11, labeled Percent Per Man-in-Unit.)

TABLE 8

Change in Managerial Support,
Attributed to Source of Change

Tiers	Percent Caused by Personnel Replacement	Percent Attributable to Behavioral Change	Percent Per Man-in-Unit (Percent Change/N)
Top Management	0%	-3.9%	-.11%
General Foremen	-6.8%	+24.8%	+.26%
Foremen	+88.7%	-2.8%	+.29%
Total	+81.9%	+18.1%	

TABLE 9

Change in Managerial Goal Emphasis
Attributed to Source of Change

Tiers	Percent Caused by Personnel Replacement	Percent Attributable to Behavioral Change	Percent Per Man-in-Unit (Percent Change/N)
Top Management	0%	-3.7%	-.10%
General Foremen	+4.1%	+34.4%	+.56%
Foremen	+29.9%	+35.2%	+.22%
Total	+34.0%	+65.9%	

TABLE 10

Change in Managerial Work Facilitation
Attributed to Source of Change

Tiers	Percent Caused by Personnel Replacement	Percent Attributable to Behavioral Change	Percent Per Man-in-Unit (Percent Change/N)
Top Management	0%	+1.4%	+.04%
General Foremen	+4.2%	+16.8%	+.30%
Foremen	+26.3%	+51.4%	+.26%
Total	+30.5%	+69.6%	

TABLE 11

Change in Managerial Interaction Facilitation
Attributed to Source of Change

Tiers	Percent Caused by Personnel Replacement	Percent Attributable to Behavioral Change	Percent Per Man-in-Unit (Percent Change/N)
Top Management	0%	+5.4%	+.15%
General Foremen	+4.3%	+16.6%	+.30%
Foremen	+27.7%	+46.0%	+.25%
Total	+32.0%	+68.0%	

TABLE 12

Behavioral Change-Per-Supervisor
Attributed to Source of Change

	Organizational Levels		
	Top Management (N in Both Years = 6)	General Foremen (N in Both Years = 7)	Foremen (N in Both Years=23)
Managerial Support	-.65%	+3.5%	-.12%
Managerial Goal Emphasis	-.62%	+4.9%	+1.5%
Managerial Work Facilitation	+.23%	+2.4%	+2.2%
Managerial Interaction Facilitation	+.90%	+2.4%	+2.0%

To summarize, the total picture of change which we see in the profile charts is more attributable to lower than upper echelons of the plant. In simple volume terms, much of the change occurred at the foreman level, but the impact on a per-individual basis appears to have been greatest among general foreman. Little or no change occurred among the top managers. Although most of the leadership change was true behavioral change, managerial support reflects a different pattern - most of the impingement in this dimension was caused by replacing less supportive foremen with foremen who were considerably more supportive.

CONCLUSIONS

These findings suggest, in toto, the following general conclusions:

(1) Findings in relation to production costs and total volume of product suggest that these dimensions of performance are, in this plant, characteristic of the plant as a whole, not of any cost center separately.

(2) Absence rate is an available measure which more accurately reflects the separate performances of sub-units, however. Here our data suggest that organizational climate and leadership are directly related to a low absence rate, and that dissatisfaction is a confirmatory reaction, not a cause.

(3) The greatest change during the course of the development program occurred on measures that were, in 1966, the source of the greatest problems, managerial leadership. Specifically, conditions changed in a favorable direction in direct proportion to the extent to which the data revealed them to have been deficient in 1966. The evidence is strongest that managers changed their leadership on the basis of its original deficiencies and of its deviance from expressed ideals.

(4) Greatest change occurred at the middle management (General Foreman) and lower management (Foreman) levels. Least change occurred at the top management level, despite the fact that feedback was, for that group, supplemented by a great deal of individual counseling as well as team training.

(5) Most of the managerial leadership change was true behavioral change. An exception is the change in managerial support, which was caused more by the replacement of less supportive with more supportive foremen than by any net improvement in the behavior of foremen present in both years.

CASE III - A STUDY OF RESISTANCE TO CHANGE

INTRODUCTION

The third study of organizational change began at the same approximate date as the first two. As a description of events will indicate, it aborted rather early and produced less than optimal results. A studied consideration of the reasons for this outcome may perhaps provide enlightening contrast to the successes described in the first two cases.

This study originated in autumn, 1965, discussions between representatives of the Institute for Social Research and the industrial relations division of a major company about the role played by systematic measurement in organizational development programs. From these early conversations came an interest on the part of the company in trying out measurement-oriented development in one "typical" plant.

Important criteria for selection of the plant were that the plant be:

(1) Not radically new, but similar to established facilities around the country;

(2) Not part of an enormous installation with complicated technical and interpersonal relations.

The plant ultimately chosen was selected as the plant most suitable for the contemplated effort, provided that it agreed to participate in the study.

Our original proposal had been to provide, in addition to tabulated survey results, staff help to their managers and supervisors. Specifically, we suggested that they embark upon a program of group utilization, working from the data toward an identifying and solving of organizational problems suggested by the data. After considerable discussion, the plant elected to participate in the measurement, but not in the measurement-based utilization, phase of the planned study.

The final objectives, therefore, as outlined in memoranda at that time, were:

(1) To clarify local plant problems by systematic organizational measurement;
(2) To provide a benchmark for organizational development efforts;
(3) To provide experience for the entire company in the procedures and usefulness of measuring the organizational system.

The questionnaire administration was carried out late in May, 1966, and initial feedback of tabulated questionnaire data was available in late July.

Several visits were made by the project staff to the plant between July, 1966, and the termination of the study in June, 1967. In the last visit (June, 1967), the same questionnaire used in the original measurement was readministered to a small sample, to permit a 1966-1967 year to year comparison.

WHAT THE 1966 DATA SHOWED

An Overview

The general picture in 1966 was a positive one. The employees' view of the company was for the most part favorable, as were their feelings about their supervisors, jobs, pay, and fellow employees.

The broadly positive picture was marred, however, by a number of more negative, specific perceptions:

(1) The company was felt to be too conservative in the area of innovation. Since employee resistance to change is the more common finding, this perception of insufficient change must be counted a rather serious criticism.

(2) Communication was less effective than it should be, and inordinate use was made of rumors as information sources; too little information was received from foremen and managers.

(3) Operations and units were less well coordinated than they should be.

(4) Decision-making was too centralized, with the result that decisions were often based upon partial, and inaccurate, information.

(5) Opportunities for advancement into more challenging work were seen as seriously limited, at least in part by the hyper-fractionated character of plant jobs.

(6) Supervisors were seen as somewhat less technically skilled than they should be, and not very effective in promoting teamwork and problem-solving.

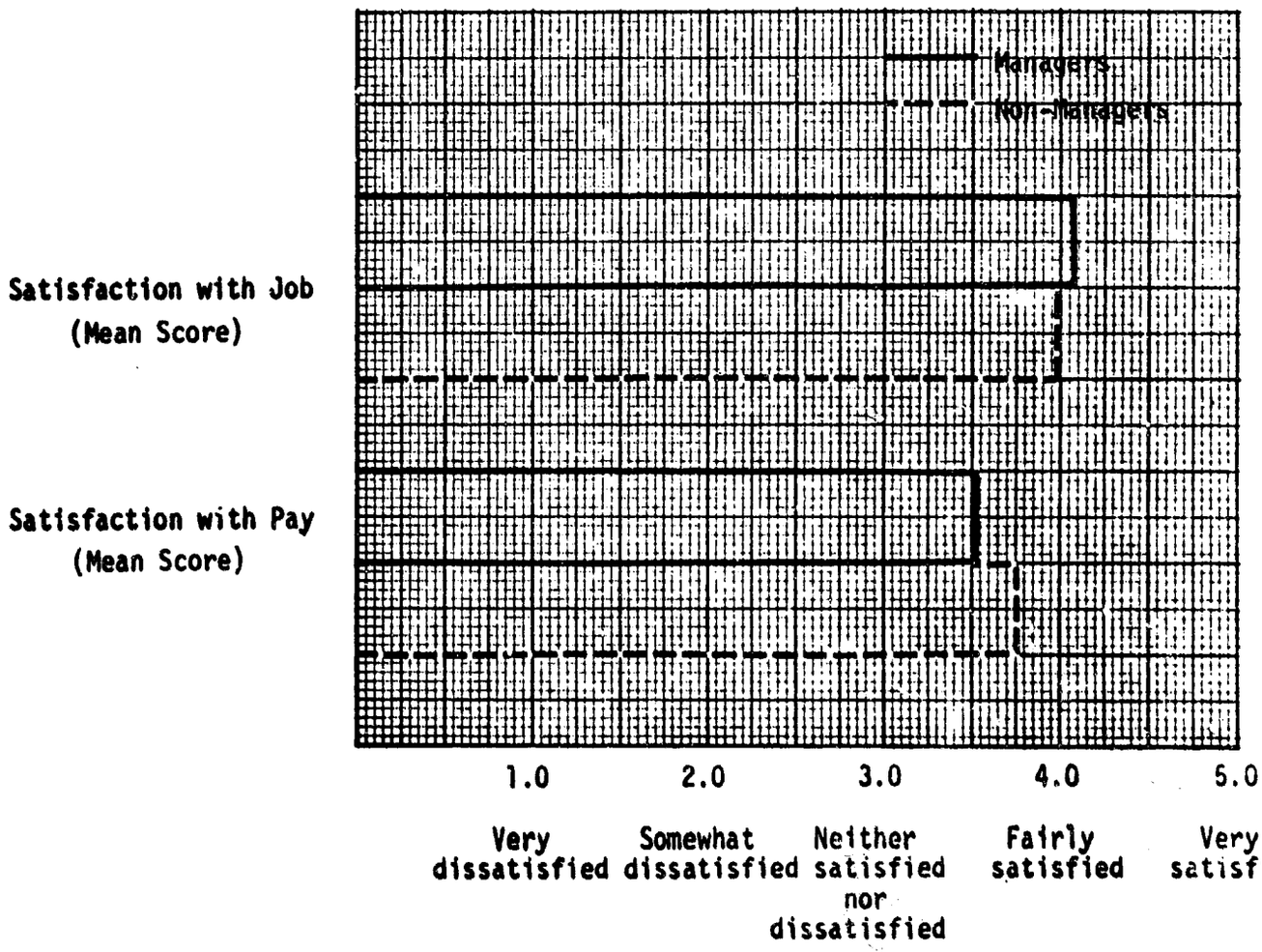
(7) Despite the fact that modern technology requires more reliance upon the help and encouragement of fellow employees than has been true in the past, peer leadership at the plant was inordinately low, the desire for it unusually high.

The Job

Satisfaction with the job and satisfaction with pay were generally high. As Figure 1 indicates, the average employee was "fairly satisfied" with his job and with his pay. 78 percent reported they were either "fairly satisfied"

FIGURE 1

SATISFACTION WITH JOB AND WITH PAY



or "very satisfied" with their job; 69 percent reported they were either "fairly satisfied" or "very satisfied" with their pay. Managers and non-managers were almost identical in average job satisfaction; non-managers were perhaps slightly more satisfied with their pay than were managers.

Another series of questions dealt with actual job characteristics and how important each was felt to be. Employees were asked to describe their jobs, on certain characteristics, and then to indicate the importance to them of these same characteristics. The results are presented in Figure 2.

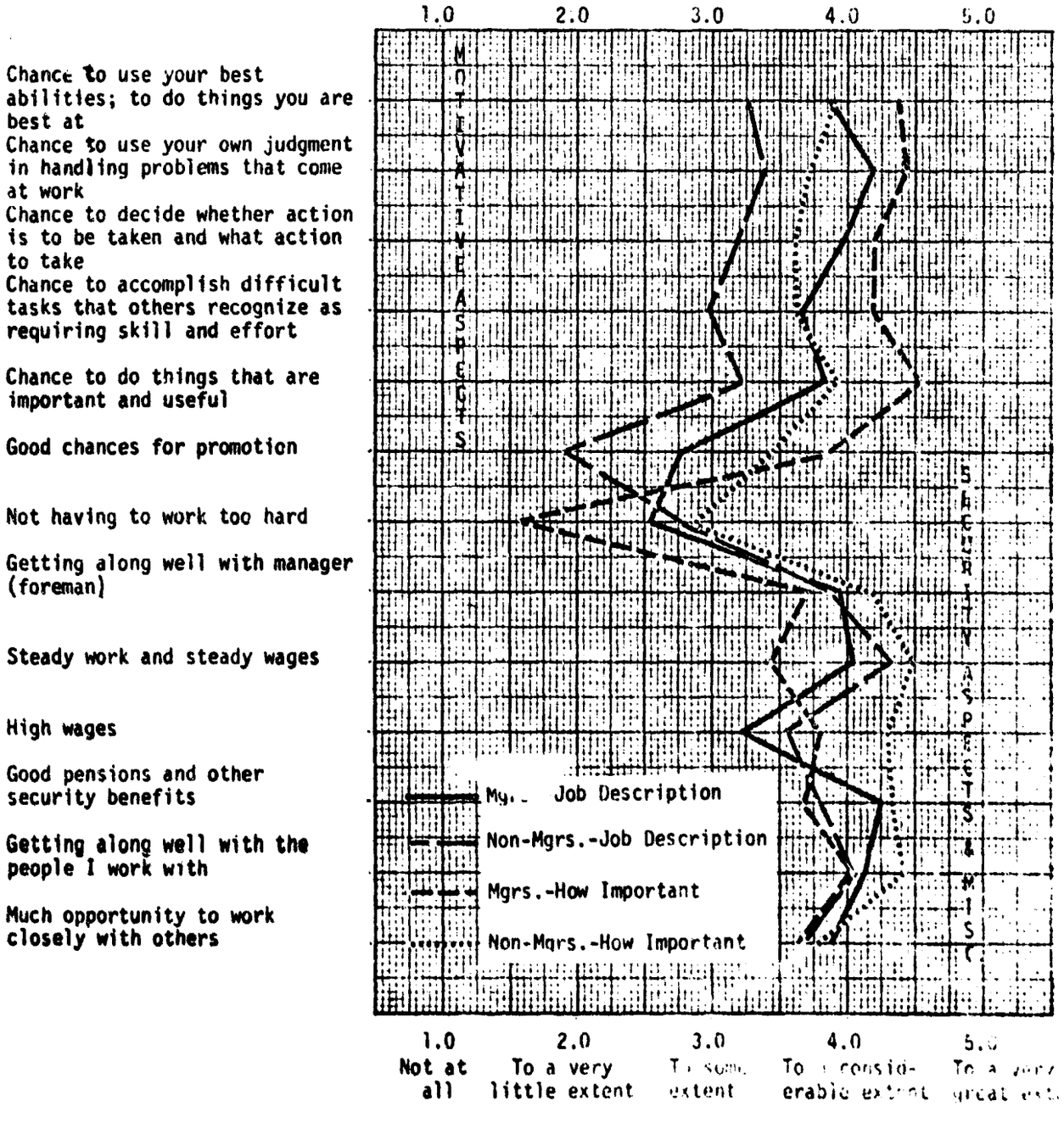
As Figure 2 indicates, the greatest discrepancy between actual job characteristics and importance attached to them ("ideal") occurred in the motivating aspects of the work; the largest differences were obtained for good chances for promotion and the chance to do things that are important and useful. Items representing the motivating aspects of the work (the first six items) had a mean actual-ideal difference of .73 while the difference was only .38 for working conditions and benefits (items 7, 9, 10, 11) and .25 for interpersonal items. Thus the plant employees felt their greatest lack was for jobs with motivating characteristics and opportunities for self-actualization.

Managers felt that their jobs were generally "richer" in those things that stimulate and challenge than did non-managers. However, they also attached greater importance to these characteristics. Conversely, they felt that their jobs were less concerned with those things that are comparatively unimportant to them--security and interpersonal interactional conditions.

For each set of respondents (managers and non-managers), the difference between the amount of each attribute present in their job and the importance they attach to that attribute can be calculated. Although, as we have said, managers viewed their jobs in "rich" terms, their aspirations were correspondingly greater, and the two lists of differences correlate almost perfectly (.88). Perhaps, therefore, this accounts for the fact that there was relatively little difference between the two groups on satisfaction with pay (managers 3.53, non-managers 3.74), or on satisfaction with the job (managers 4.08, non-managers 3.98).

FIGURE 2

ACTUAL JOB CHARACTERISTICS AND THEIR IMPORTANCE



Chance to use your best abilities; to do things you are best at

Chance to use your own judgment in handling problems that come at work

Chance to decide whether action is to be taken and what action to take

Chance to accomplish difficult tasks that others recognize as requiring skill and effort

Chance to do things that are important and useful

Good chances for promotion

Not having to work too hard

Getting along well with manager (foreman)

Steady work and steady wages

High wages

Good pensions and other security benefits

Getting along well with the people I work with

Much opportunity to work closely with others

Employees were asked to what extent they felt a real responsibility to achieve the success of the company. The result indicates that most employees (71 percent) felt a considerable responsibility for the success of their company.

Responses to another question indicated, however, that an individual's contribution to that success is not usually recognized. Employees were asked what the changes are that extra-hard work or a better job will be recognized; 12 percent responded that there is no chance at all for merit recognition, while 30 percent responded there is only slight chance for recognition. The employees' chances for advancement in pay and responsibilities were also measured and the results indicated that most employees see no great opportunity for advancement. 37 percent rated their chances for advancement as poor, while 32 percent rate their chances as just fair.

Despite these unfavorable feelings about opportunities for recognition and advancement, responses to several additional questions indicated that the employees' general motivation to work was moderately high. When asked to what extent they look forward to coming to work each day, 38 percent responded "to some extent," 34 percent responded "to a considerable extent," and 12 percent responded "to a very great extent." Employees were also asked whether there are things at the plant that discourage them, versus encourage, them; 45 percent reported most things around the plant encourage them to work hard.

Although both managers and non-managers reported that they try nearly always to do their very best (managers 4.37, non-managers 4.47), there was a half scale point difference between the two groups in their motivation to work[1] (3.78 for managers, 3.28 for non-managers). There was a full scale point difference in their reports of the likelihood of being recognized for extra-hard work or for a better job (managers 3.78, non-managers 2.72). (These differences correspond to differences observed earlier in the intrinsic interest and challenge of jobs.)

---

[1] The motivation to work index is a two-item mean of both items mentioned above: (a) the extent to which the respondent looks forward to coming to work each day, and (b) the extent to which plant conditions encourage him to work hard.

Employees were asked to what extent they had been given adequate training to do their job in the best possible way. Only 15 percent felt some definite deficiency in the technical training provided, whereas over half felt it was very adequate.

The effect of the seniority system was assessed by asking the employees about the extent to which it prevents them from making their greatest contribution to the company. The seniority system was not seen as a detriment. 41 percent saw the seniority system as no detriment at all, while 17 percent responded that it is a detriment "to a very little extent."

Leadership and Management

A number of items asked respondents to describe their immediate supervisor's organizational leadership behavior, that is, behavior reflecting his supervisory style. Most of these items are combined into leadership indices reflecting four characteristics of supervisory practice. Further insight may be obtained by considering them in greater detail. For this reason the responses of all non-managers, all managers, and department managers plus shift foremen, together with certain categorical comparisons between total managers and total non-managers, are presented in Table 1, arrayed by declining percentage of favorable response and comparability of content.

It is apparent from these data that:

- Both managers and non-managers were most favorable when describing the extent to which their supervisor is considerate or approachable, or the extent to which they are generally satisfied with him (Cluster 1). Non-managers were much less favorable than managers about these characteristics, however.
- Both managers and non-managers were somewhat less favorable, although still fairly favorable, about their superior's performance in the technical-process aspect of the operation (Cluster 2). Once more, managers were much more favorable than were non-managers.
- Managers were quite favorable about their superior's fairness, and about the confidence and trust they have in him; non-managers were clearly much less favorable about their supervisors on these characteristics (Cluster 3).

TABLE 1

Responses About Immediate Supervisor

Cluster No.	Item	Per Cent Responses in Two Most Favorable Categories: Non-Mgrs.	Critical Ratio	Total Mgrs.
1	Pays attention to what employees are saying	67		82
	Is willing to listen to employee problems	57		79
	Is friendly and easily approached	68		76
	Satisfaction with supervisor	61		74
	Mean	63	2.58	78
2	Understands the technical side of the operation	52		69
	Does not insist that he review every decision	41		69
	Maintains high standards of performance	54		60
	Sets an example by working hard himself	53		68
	Mean	50	2.78	67
3	Confidence and trust in supervisor	53		71
	Tries to be fair	52		74
	Goes to bat for employees	54		79
	Mean	53	3.61	75
4	Encourages extra effort	49		48
	Encourages members of group to work as team	47		50
	Encourages exchange of opinions and ideas	31		40
	Offers new approaches to problems	35		24
	Mean	40	----	40
5	Gives recognition for doing a good job	24		23
	Keeps you posted on how well you're doing	24		12
	Shows employees how to improve their performance	25		11
	Mean	24	1.76	15
6	Helps plan, organize and schedule work ahead*	33		

*Respondents were asked on ma. items to tell us how the supervisor acts now and how they would like him to act ("desired behavior "). Both desired and actual scores are low on this item; nevertheless, the desired score is greater than the actual.

- There is no difference, and both groups were relatively unfavorable, on the teamwork-motivational aspects of managerial leadership (Cluster 4). Less than half of each group perceived their supervisors in a favorable light on these items.
- Relatively few in both groups saw their immediate supervisor as providing recognition and helping them improve their work. Managers felt their supervisors do a better job in these areas than did non-managers.

It seems reasonable to interpret these data as indicating that leadership practices in the plant, both those directed toward non-managerial and those directed toward managerial subordinates, were viewed by the respondents in a less favorable light than comparable measures in other, well-managed companies would lead us to expect. The lesson about the necessity in modern work organizations of being considerate and approachable, rather than distant and aloof, had been learned reasonably well, at least at the upper echelon. Similarly, an adequate job was done in handling the technical side of the operation. (Data not presented here suggested an interesting pattern: upper level managers were felt by respondents to be more skilled in the technical aspect of the operation than they need be, whereas respondents felt that shift foremen were less skilled than they should be.)

The data in Table 1 suggest, however, that there were sizeable problems in the team-work-motivational and recognition-upgrading areas. Only a minority of respondents were at all positive about these aspects of the supervision provided them, and, in the case of recognition and help in skill upgrading, shift foremen were actually perceived to be doing a better job than upper management.

Fellow Employees

Leadership in a modern plant is not confined to supervision. The interdependent nature of modern technology means that often employees, not the supervisor, have the most information about what is going on in a unit. This requires that employees provide considerable leadership for each other.

The higher educational level of present-day employees also means that they are more capable of providing peer leadership. Actual peer leadership was assessed by the extent to which employees exhibited mutual behavior in the four leadership categories, desired peer leadership by the extent to which they indicated they would like to see such behavior. The results for "actual" and "desired" peer leadership, for both managers and non-managers, are presented in Figure 3.

As Figure 3 shows, managers received more leadership from their peers than did non-managers, and managers wanted more than did non-managers. The differences between the two groups of respondents were slightly larger for the work facilitation and interaction facilitation measures than for the other two leadership dimensions.

The overall pattern of peer leadership at the plant was similar to that of other organizations, except that the actual amount of peer leadership provided was lower here than in other comparable kinds of plants. On three of the measures, goal emphasis, work facilitation, and interaction facilitation, the differences between actual and desired were greater than usually observed. Thus peer leadership was not only lower at the plant, but there was a greater difference between actual and desired levels of peer leadership among plant employees.

In response to a general question about how satisfied they are with the people in their work group, the employees indicated that they were generally satisfied with their peers. 49 percent responded they were "fairly satisfied" with people in their work group, while 28 percent were "very satisfied." Employees also had considerable trust and confidence in their peers. When asked about this, 58 percent reported "considerable" or "very great" confidence and trust in the people in their work group.

The Company

Responses by managers and by non-managers to questions about the company and plant are presented graphically in Figures 4 through 6. Two conclusions emerge:

FIGURE 3

ACTUAL AND DESIRED PEER BEHAVIOR

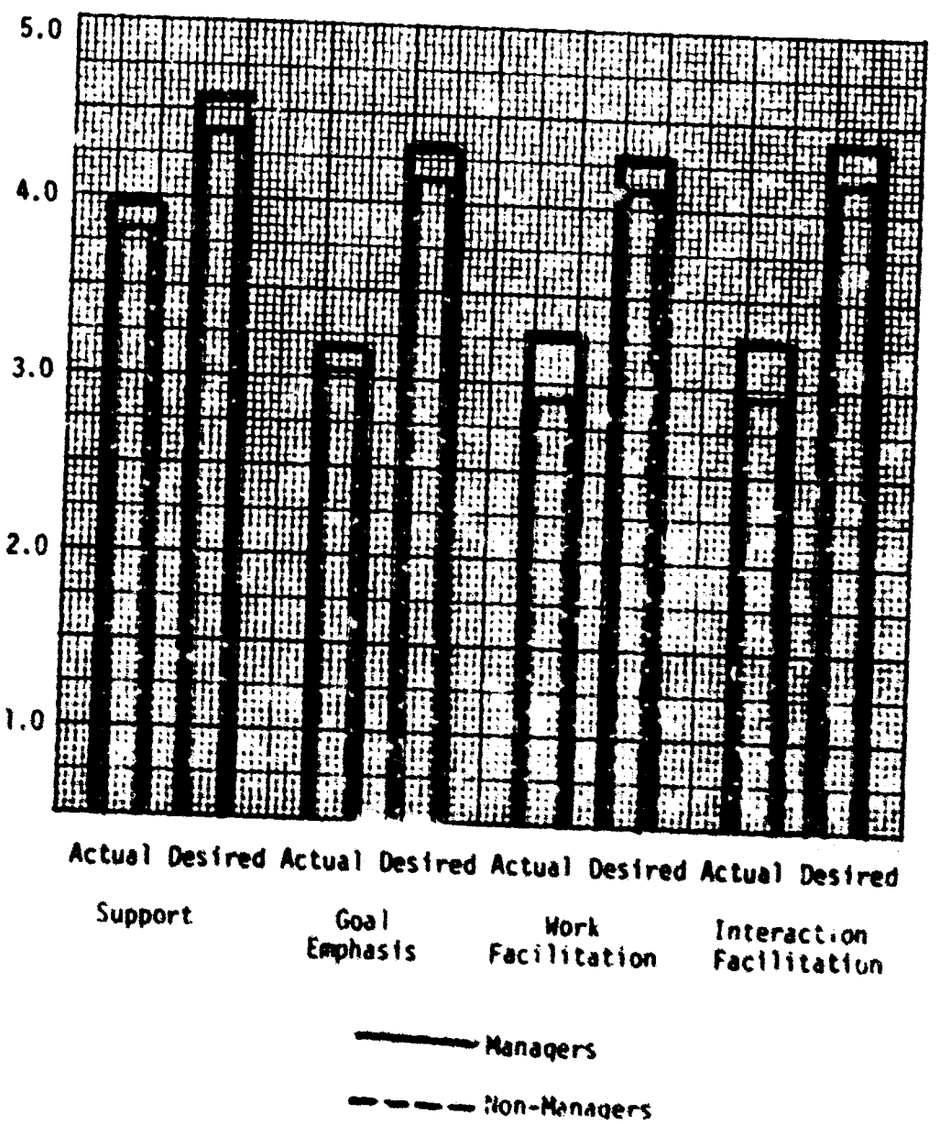


FIGURE 4

GENERAL ATTITUDES OF MANAGERS AND NON-MANAGERS

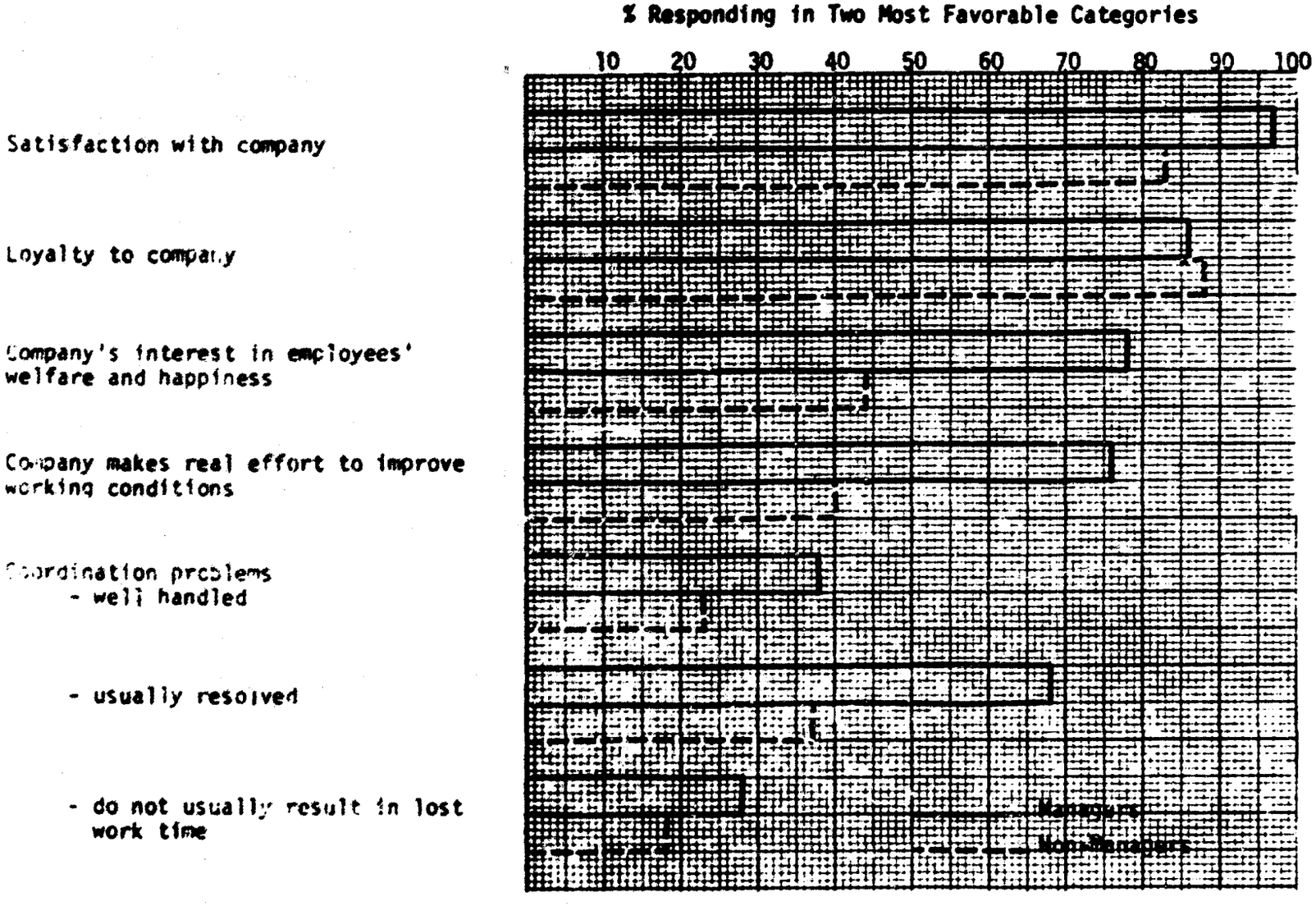


FIGURE 5

DECISION MAKING PRACTICES
AS SEEN BY MANAGERS AND NON-MANAGERS

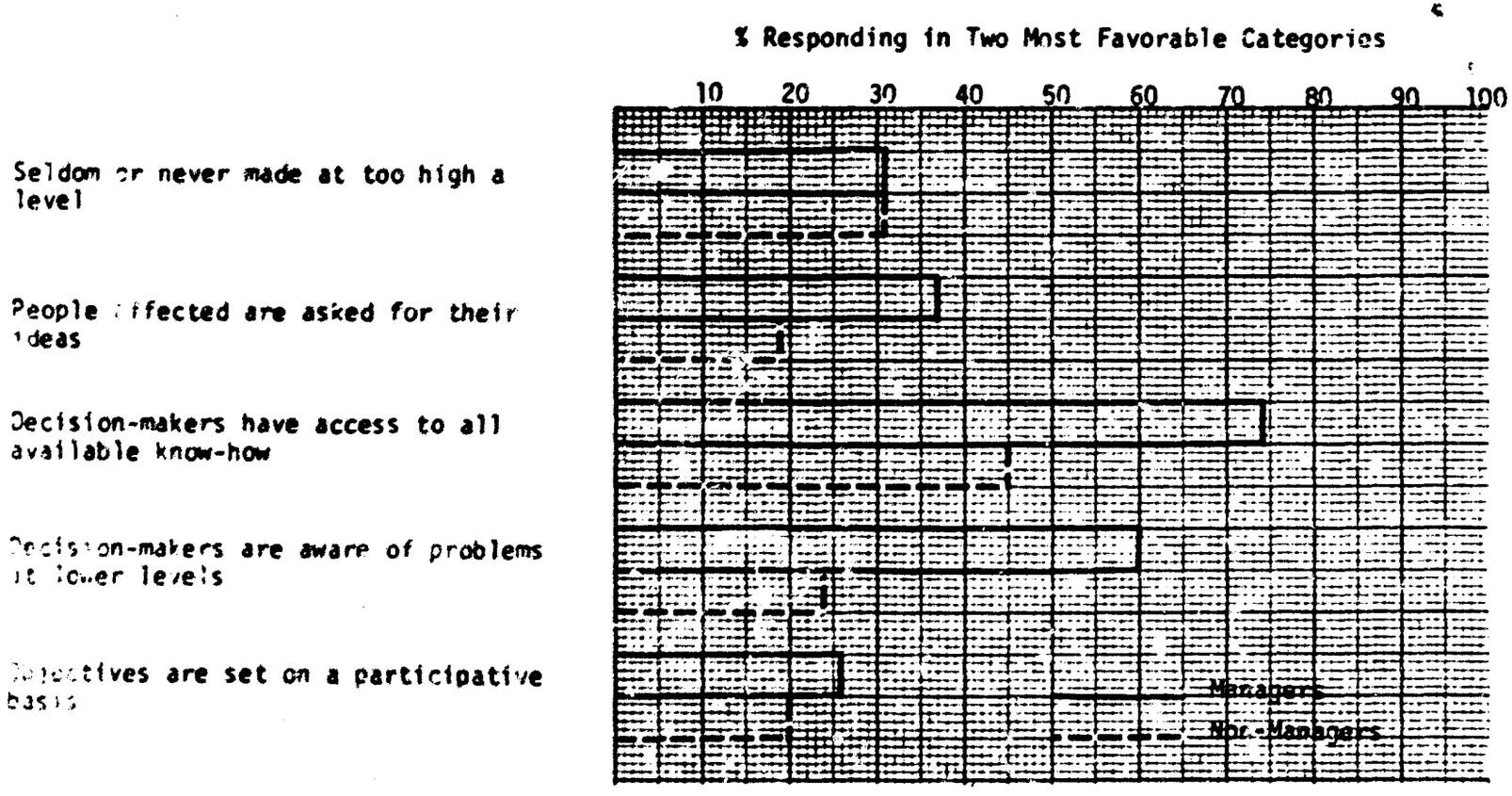
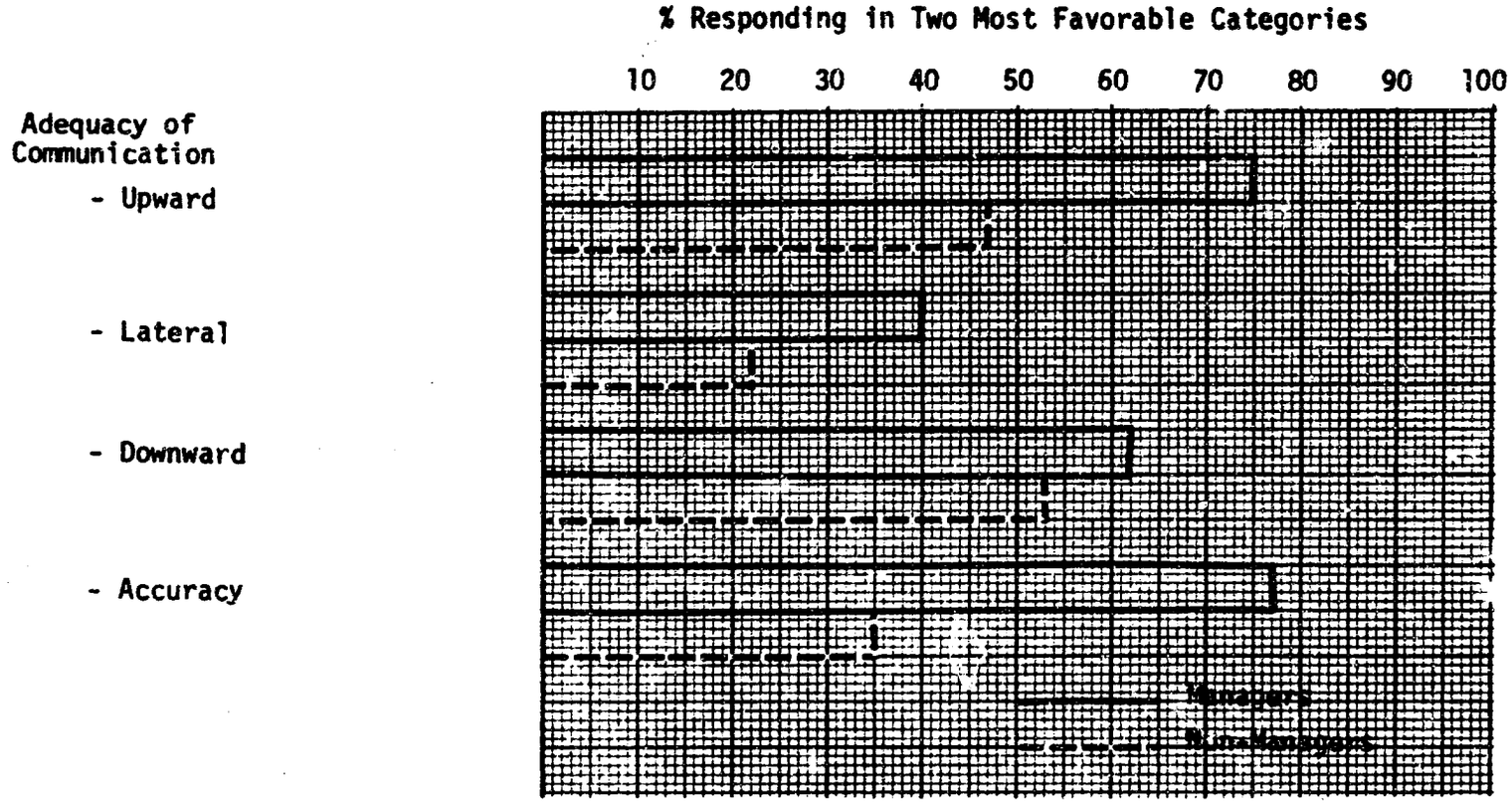


FIGURE 6

COMMUNICATION, AS SEEN BY MANAGERS AND NON-MANAGERS



(1) Although responses to general questions were quite favorable, the response to specific questions was much less so; in fact, they were often clearly negative.

Example: 97 percent of the managers said that the company was "somewhat better" or "much better" than most other companies; however, only 38 percent felt that problems between departments within the plant were definitely well handled (two most favorable categories).

Example: 88 percent of the non-managers said that they have a substantial feeling of loyalty to the company, yet only 24 percent felt that those who make decisions in the plant were aware of the problems that exist at lower levels.

(2) There was a great difference between how managers felt, and how non-managers felt, about many specific issues.

Example: 77 percent of the managers felt that communication within the plant was essentially accurate, whereas only 35 percent of the non-managers felt that it was.

Example: 60 percent of the managers felt that decision-makers in the plant were aware of problems that exist at lower levels, whereas only 24 percent of the non-managers felt that way.

General Management, Communication, Decision-making, and Coordination

For both managers and non-managers, the most unfavorable opinions were those about (a) how well inter-departmental problems are handled, (b) loss of valuable work time because of poor interdepartmental coordination, (c) lateral communication to other departments and shifts, (d) decision-making at appropriate levels, (e) asking people who will be affected by a decision for their ideas, (f) awareness of decision-makers of problems at lower levels, and (g) methods by which objectives are set. On all of these issues, an average of less than 40 percent of the managers, and less than 25 percent of the non-managers, felt positively. (See Figures 4, 5, and 6.)

In addition, non-managers felt quite negative about (a) accuracy of communication, and (b) resolution of inter-departmental conflict, and they felt moderately negative about (c) the company's interest in their welfare, and (d) its effort to improve working conditions.

Respondents were also asked to rate the importance of a number of potential information sources. Their importance, that is, the extent to which respondents rely upon them for information, is presented in Table 2.

The mean importance attached to these information sources was almost identical for managers (2.99) and non-managers (3.02). It is also apparent that almost identical importance was attached by both groups to their immediate superiors, fellow employees, and service personnel as sources of information. Major differences occurred, however, in the importance attached to the department manager and to rumors as sources. In fact, these two sources exchange approximate places in absolute, as well as in comparative, importance: rumors were evaluated at 2.61 on a five-point importance scale by managers, at 3.44 on that same importance scale by non-managers. Since most of those managers in our respondent group who were not themselves department managers were shift foremen, the difference suggests that only the rumor mill filled the gap for non-managers that, for shift foremen, was filled by department managers.

In addition, the five questions regarding communications were combined into an index and this index was related to the sources of information questions. The result appears in Table 3.

These correlations indicate an inverse relationship between effective communication and the most frequent information sources. From the table, it is apparent that the strongest positive relationships of effective communication were to source importance of one's immediate and department managers. Lowest, or most negative, in their relationship to effective communication was source importance of fellow employees and rumors. The data indicate, therefore, for non-managers at the plant, the most frequent sources of information about the company were precisely those that are least likely to result in good communication.

TABLE 2

IMPORTANCE OF VARIOUS INFORMATION SOURCES
FOR MANAGERS AND NON-MANAGERS

	Managers		Non-Managers		
Information Source	Mean	Rank	Mean	Rank	Difference between Mgrs. & Non-Mgrs.
Manager	3.15	3	2.98	3	.17
Department Manager	3.59	1	2.94	4	.65
Fellow Employees	3.28	2	3.32	2	-.04
Service Personnel	2.35	5	2.42	5	-.07
Rumors	2.61	4	3.44	1	-.83

TABLE 3

RELATIONSHIP OF IMPORTANCE OF SOURCES OF INFORMATION TO EFFECTIVE COMMUNICATION

(Non-managerial Respondents Only)

	Manager	Department Manager	Fellow Employees	Service Personnel	Rumors
Correlation with Communication Index*	.46	.40	.10	.24	-.20

*The Communication Index consists of the mean score on items measuring
(a) receptivity of higher levels to upward communication,
(b) adequacy of downward communication,
(c) adequacy of communication with other departments and shifts,
(d) communication within the work group, and
(e) absence of distortion of information

Innovation

As Figure 7 indicates, there was also a general feeling that the company is rather slow to try new work methods. Four out of every eight non-managers, and three out of every eight managers, expressed this opinion. This is especially serious in view of the apparent willingness to change: a large majority of both managerial and non-managerial respondents felt that new methods ordinarily work out well, and practically no one felt that they have been seriously disruptive.

Conclusions

There were, therefore, in 1966 two definite blockages in the plant's operating system. First, there was inadequate linkage among departments; problems and planning between one department and another were rather poorly managed.

Second, there was a definite lack of linkage of the non-managerial employees to the managerial superstructure. The result was some feeling of alienation and distance.

These two breakdowns of organizational linkage may be depicted graphically by the horizontal and vertical "section" lines in Figure 8.

FIGURE 7

ATTITUDES TOWARD COMPANY ON WORK METHODS' INNOVATION

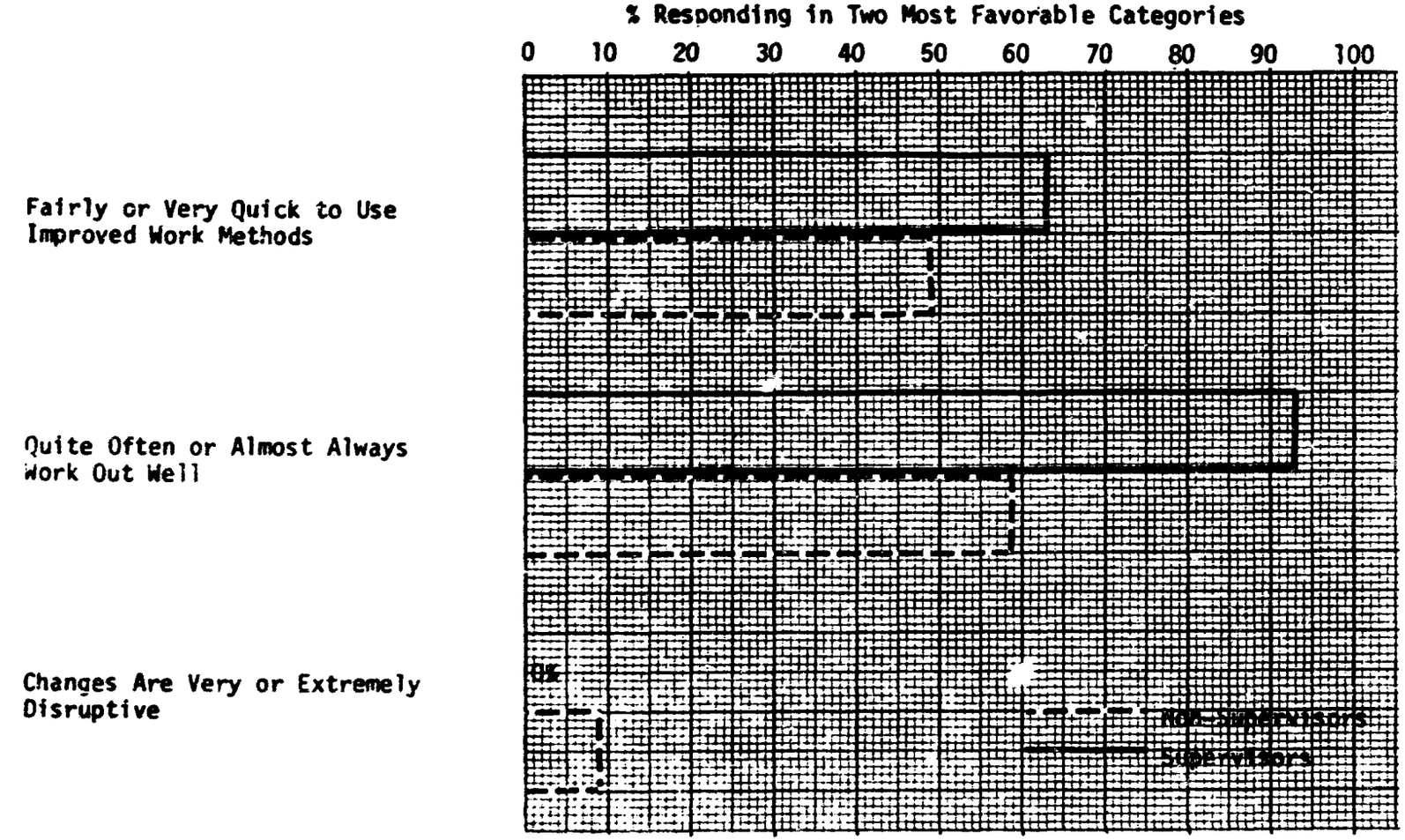
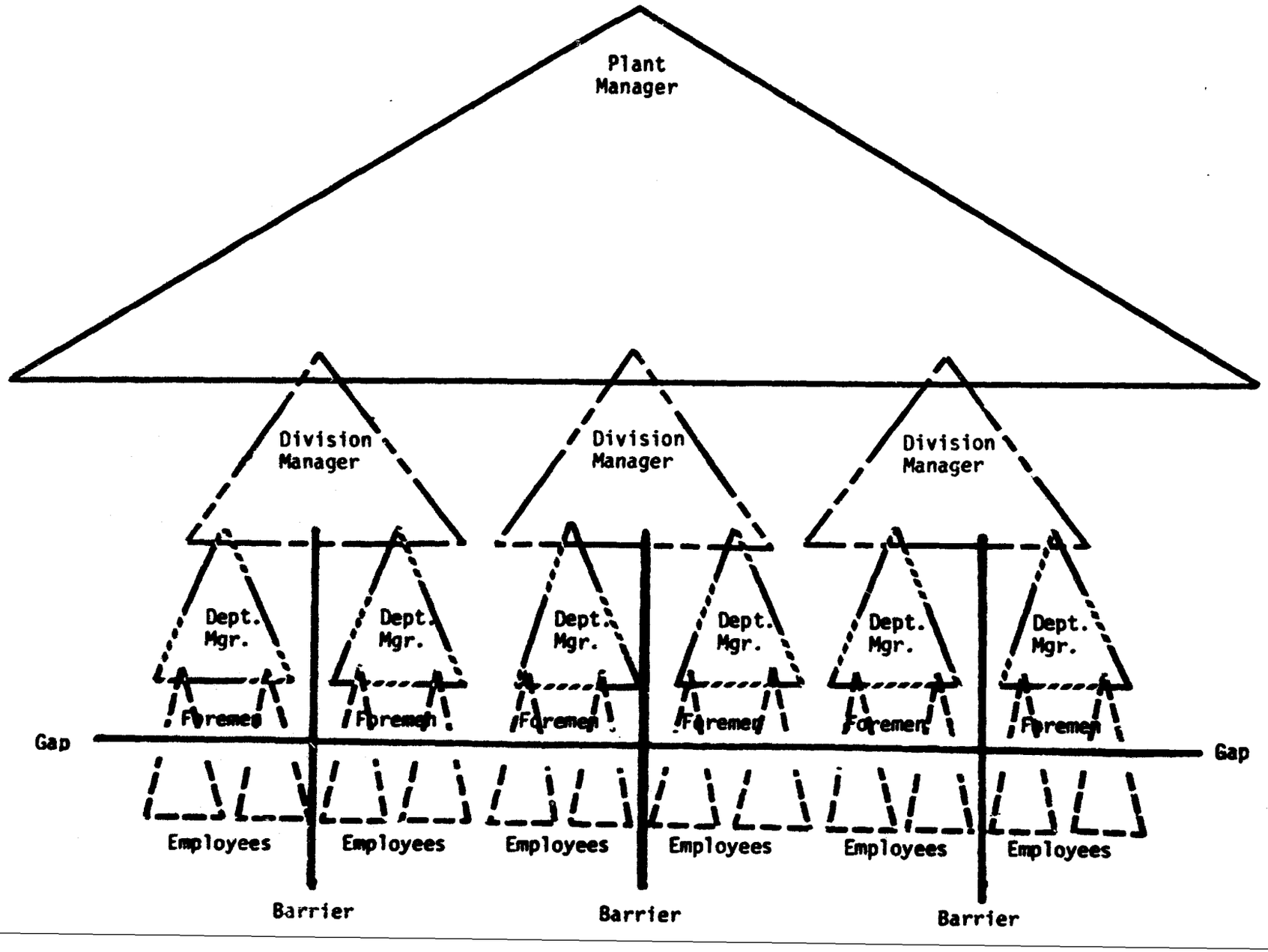


FIGURE 8


Plant Manager
Division Manager
Division Manager
Division Manager
Dept. Mgr.
Dept. Mgr.
Dept. Mgr.
Dept. Mgr.
Dept. Mgr.
Dept. Mgr.
Foremen
Foremen
Foremen
Foremen
Foremen
Foremen
Gap
Gap
Employees
Employees
Employees
Employees
Employees
Employees
Barrier
Barrier
Barrier

PROFILES 1966-1967

The situation in the plant in 1966 has been characterized in some detail in the preceding section in terms of responses to questionnaire items by plant employees.

The plant can also be characterized in terms of the organizational system in use in 1966. Two members of the project staff who had considerable contact with the plant described it, as of that date, using a simplified Systems chart. The two raters agreed quite highly; the correlation between their two profiles is .67. A mean profile is presented in Figure 9.

This profile indicates that these two senior staff members saw the plant as, in general, on the borderline between Systems 2 and 3. Communication practices are seen as more nearly System 3, whereas decision-making practices more nearly resemble those of System 2.

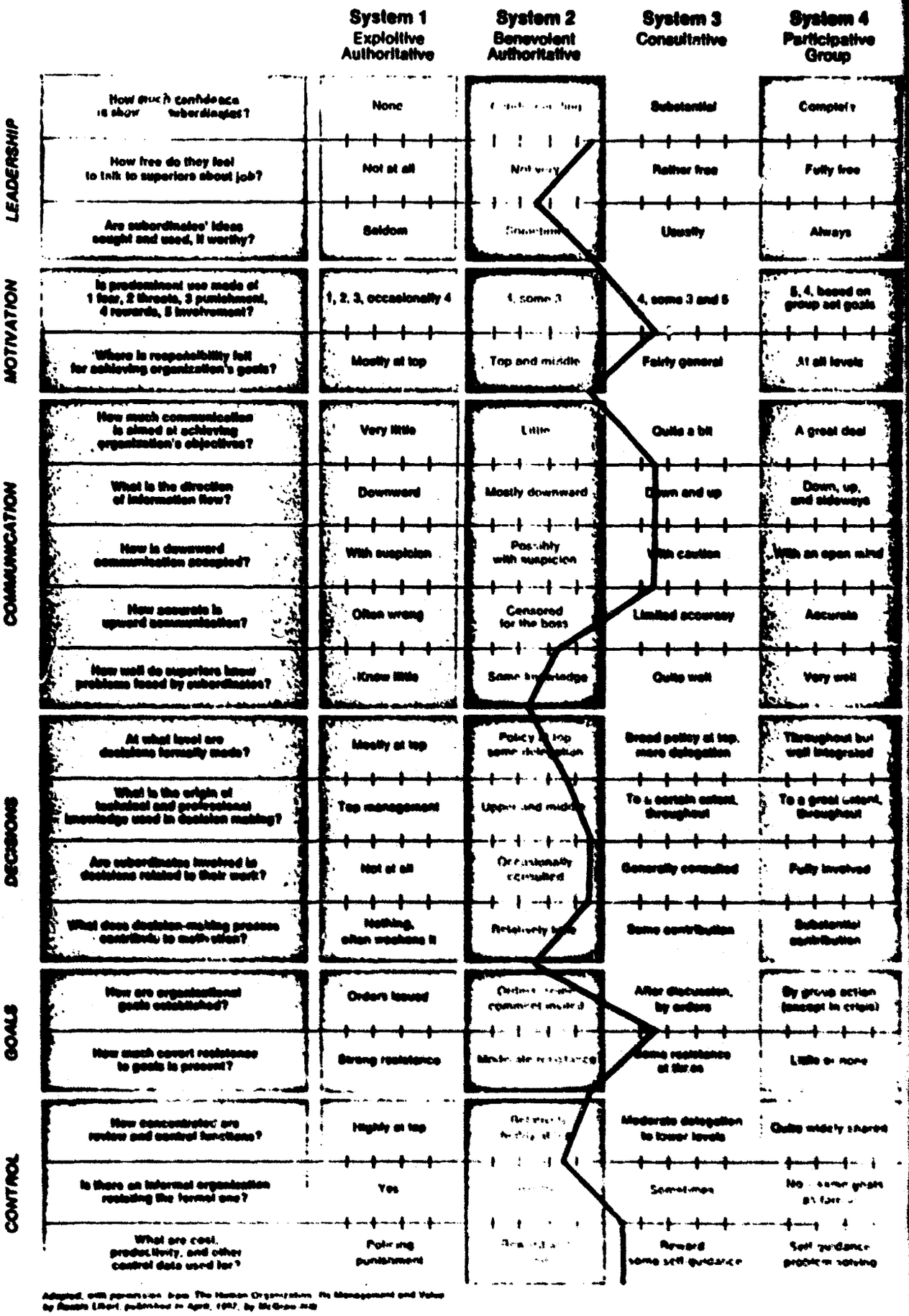
On the initiative of the Institute, a sample remeasurement of the plant was obtained June, 1967, to measure approximate progress during the year. Although a request for random sampling was transmitted with the request for the survey, the sample made available upon arrival was considerably more haphazard than random. It was also smaller than requested, and was subsequently enlarged by mail-back returns. The representativeness of the final sample, consequently, is somewhat questionable. Keeping this in mind, some guarded indication of progress over the year may be estimated.

Part of the questionnaire administered in the plant in 1966 represents a "core" or standard instrument, used by I.S.R. in many studies. It was this portion that was readministered in 1967. The results for both 1966 and 1967 are plotted in Figure 10 by index score against a backdrop of the grand mean and range of means for all organizations studied to date.

The 1966 results present a pattern little different in shape from the profiles obtained, on the average, from other organizations. Satisfaction with the company and with pay are considerably above, and satisfaction with the job slightly above, the grand average of all organizations. These findings are not too surprising, in view of the favorable community comparison

FIGURE 9

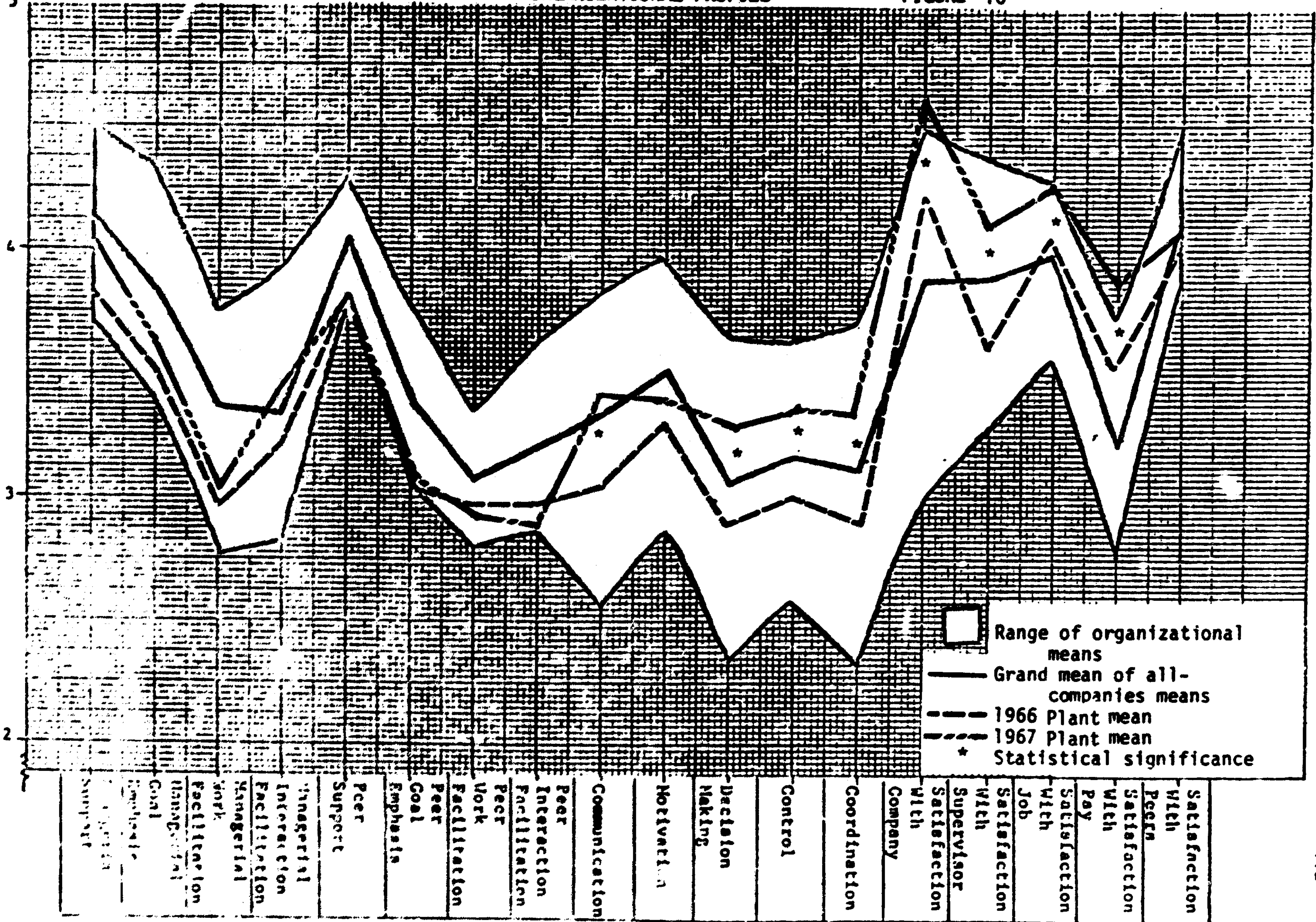
Organizational System of the Plant 1966
(As viewed by the ISR Project Staff)



Adapted, with permission, from The Human Organization: Its Management and Value by Rensis Likert, published in April, 1967, by McGraw-Hill

COMPOSITE ORGANIZATIONAL PROFILE[1]

FIGURE 10



wage policy maintained by the plant. On all other measures the plant tends to fall below the all-company average.

The 1967 profile shows improvement upon a number of non-leadership measures--some, in fact, about which problems were perceived to exist in 1966. For example, communication improved, as did decision-making, control, and coordination. No appreciable improvement occurs on motivation, nor does it occur with regard to supervisory leadership or peer behavior.

It is possible that the fact that the data presented in Figure 10 are heavily weighted in favor of non-managerial respondents conceals improvement in the supervisory behavior of various management groups. For this reason, the four leadership indices (Support, Goal Emphasis, Work Facilitation, and Interaction Facilitation) are presented in Table 4 for 1966 and 1967, by hierarchical level, as seen by each relevant subordinate level.

The profile changes observed in Figure 10 are more comprehensible in the light of the findings from Table 4. The problem of weak inter-unit linkage observed in 1966 is much alleviated by the changes which occurred in the behavior of division managers. By 1967, those higher-level managers were providing much of the work facilitation and interaction facilitation which was missing in 1966 and which contributed to the general organizational problems apparent at that time. Similarly, a change in the direction of much more work facilitation was observed in the behavior of department managers.

The other linkage problem, however, did not show any appreciable alleviation. The behavior of shift foremen has changed not at all; presumably, non-managerial employees still feel relatively isolated from, and not linked adequately to, the plant as a productive organization.

TABLE 4

CHANGES IN MANAGERIAL LEADERSHIP 1966 to 1967,
INDEX MEANS BY SUPERVISORY LEVEL

Behavior by	Dimension			
	Support	Goal Emphasis	Work Facilitation	Interaction Facilitation
Division Managers				
1966	3.95	3.55	2.74	3.24
1967	4.03	3.66	3.15	3.65
Department Managers				
1966	4.33	3.86	2.55	3.72
1967	4.04	3.71	3.43	3.78
Shift Foremen				
1966	3.89	3.60	3.21	3.10
1967	4.04	3.63	3.04	3.09

RELATIONSHIPS TO ORGANIZATIONAL EFFECTIVENESS

To permit a more complete test, the company furnished the following performance measures for each month from December, 1965 to August, 1966. Most of the data were performance factors reflecting the relationship of historically established ideal dollar figures to actual dollars spent. One measure, ratio of actual expense to adjusted budget, was separately obtained. The measures were staff costs, materials costs, maintenance costs, utilities costs, and direct labor costs (wages). Materials costs were based on a four month moving index, maintenance costs were based on a twelve month moving index, while the remaining measures were based on monthly figures. Quality was assessed by a measure of the number of non-standard samples going through the quality control laboratory. Finally a measure of the relationship of actual expense to adjusted budget was computed. This measure was based on monthly totals and was adjusted for shifts in the product mix.

After all questionnaire and performance measures had been collected, they were intercorrelated using Pearson product moment correlations. The resulting matrix, pairing each mean item response with the monthly measure of each performance variable, was then inspected for significant correlations.

Tables 5 - 11 present month to month relationships between various performance measures and questionnaire indices. As these data indicate, several things are apparent. These performance measures are long-term moving averages which eliminate monthly fluctuations. Thus the data would only reveal relationships over a long time. One measure which did vary month to month, ratio of actual expense to adjusted budget, showed no relationships. Moreover, most of the significant relationships occurred in the months preceding the survey. This may indicate that the cycle of time lag is long but the effects of change are immediate. In any case, the data indicate a long time lag, which we would expect from a large and complex plant.

TABLE 5

Relationships of Questionnaire Indices to Product Quality

	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Managerial Support	.17	.29	.22	.09	.43	.07	.29	.41	.40
Managerial Goal Emphasis	.26	.38	.31	.16	.47*	.15	.26	.47*	.46*
Managerial Work Facilitation	.14	.22	.17	.08	.30	.07	.19	.30	.29
Managerial Interaction Facilitation	-.05	.01	-.02	-.08	.11	-.09	.17	.10	.09
Peer Support	.20	.26	.23	.15	.29	.14	.12	.30	.30
Peer Goal Emphasis	.43	.41	.43	.42	.17	.41	-.17	.29	.32
Peer Work Facilitation	.27	.25	.26	.26	.10	.25	-.10	.18	.20
Peer Interaction Facilitation	.23	.20	.22	.25	.02	.25	-.17	.10	.12
Communication	.09	.09	.09	.09	.05	.09	- 03	.07	.08
Motivation	-.03	.08	.01	-.10	.29	-.11	.30	.22	.20
Control	-.16	-.09	-.13	-.20	.12	-.20	.24	.04	.02
Decision Making	-.22	-.06	-.16	-.31	.34	-.33	.50*	.19	.15
oordination	-.04	.04	-.01	-.09	.20	-.09	.23	.15	.13
Satisfaction with Company	-.04	-.09	-.06	-.01	-.16	.00	-.12	-.14	-.14
Satisfaction with Pay	.12	.04	.09	.16	-.17	.17	-.25	-.09	-.07
Satisfaction with Peers	.24	.23	.24	.23	.10	.22	-.09	.17	.18
Satisfaction with Supervisor	.32	.41	.36	.25	.41	.23	.15	.45	.45
Satisfaction with Job	35	.43	.35	.33	.16	.33	-.12	.26	.28

*P<.05. The size of significant correlations varies because the number of groups in each computation varied. Because of small group size, some large correlations are non-significant.

TABLE 6

Relationships of Questionnaire Indices to Staff Costs

	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Managerial Support	.41	-.51	.47	.43	-.05	.25	.36	.16	-.22
Managerial Goal Emphasis	.81*	-.02	.67	.82*	.48	.46	.81*	.99*	.99*
Managerial Work Facilitation	.54	-.23	.50	.70	.27	.31	.71	.41	.62
Managerial Interaction Facilitation	.61	-.18	.64	.59	.31	.16	.31	.35	-.42
Peer Support	.18	-.26	.12	.57	.24	-.19	.30	.10	.03
Peer Goal Emphasis	.79*	.28	.63	.83*	.69	.30	.71	.78*	.37
Peer Work Facilitation	.51	.45	.25	.86	.79*	.12	.81	.64	.44
Peer Interaction Facilitation	.32	.77*	.07	.68	.91	-.16	.41	.52	.89
Communication	.71	.00	.61	.81*	.52	.23	.70	.89	.30
Motivation	.91*	.06	.81*	.78*	.47	.64	.83*	.86*	.88*
Control	.07	-.29	.08	.37	.06	-.08	.27	-.04	.35
Decision Making	.84*	-.11	.80*	.57	.25	.65	.62	.74	.14
Coordination	.72	.03	.52	.66	.39	.55	.73	.83	.66
Satisfaction with Company	.65	-.21	.67	.42	.08	.62	.59	.47	.99*
Satisfaction with Pay	-.09	-.16	-.13	.05	-.12	.13	.35	.06	.44
Satisfaction with Peers	-.05	-.44	-.02	.39	.04	-.35	.03	-.23	-.09
Satisfaction with Supervisor	.58	-.39	.64	.42	-.01	49	.50	.34	.45
Satisfaction with Job	.58	.47	.37	.81	.74	.28	81*	.56	.99*

*P<.05. The size of significant correlations varies because the number of groups in each computation varied. Because of small group size, some large correlations are non-significant.

TABLE 7

Relationships of Questionnaire Indices to Maintenance Costs

	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Managerial Support	.55*	.46*	.51	.42	.19	.20	.25	.01	.20
Managerial Goal Emphasis	.48*	.42	.41	.37	.15	.26	.25	.21	.18
Managerial Work Facilitation	.56*	.49*	.51*	.42	.23	.20	.25	.23	.19
Managerial Interaction Facilitation	.39	.42	.44	.40	.32	.13	.14	.30	.22
Peer Support	.58*	.61*	.65*	.50*	.44	.07	.01	-.01	-.04
Peer Goal Emphasis	.37	.39	.36	.35	.19	.14	.10	.22	.03
Peer Work Facilitation	.45	.42	.44	.35	.19	-.09	-.06	-.10	-.02
Peer Interaction Facilitation	.52*	.61*	.63*	.53*	.47*	.13	.11	.11	.19
Communication	.55*	.62*	.61*	.55*	.48*	.25	.27	.34	.29
Motivation	.70*	.71*	.69*	.62*	.40	.30	.34	.38	.29
Control	.09	.07	.01	-.01	-.12	.15	.27	.05	.14
Decision Making	.17	.28	.21	.11	.19	.12	.14	.21	.18
Coordination	.32	.35	.31	.24	.11	.22	.25	.09	.15
Satisfaction with Company	.57*	.70*	.69*	.63*	.50*	.13	.09	.27	.08
Satisfaction with Pay	68*	.70*	.71*	.60*	.38	.14	.13	.26	.19
Satisfaction with Peers	.60*	.47*	.53*	.49*	31	.25	.21	.27	.14
Satisfaction with Supervisor	.63*	.55*	.60*	.51*	.29	.21	.23	.23	.27
Satisfaction with Job	.29	.30	.29	.19	.05	-.19	-.14	-.11	-.14

*P<.05. The size of significant correlations varies because the number of groups in each computation varied. Because of small group size, some large correlations are non-significant.

TABLE 8

Relationships of Questionnaire Indices to Direct Labor Costs

	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Managerial Support	-.21	-.13	.20	-.42	-.01	.10	-.08	-.46	-.24
Managerial Goal Emphasis	-.25	-.07	.29	-.34	.18	.28	-.01	-.18	-.21
Managerial Work Facilitation	-.11	.10	.37	-.20	.34	.24	.12	-.06	-.14
Managerial Interaction Facilitation	.08	-.03	.30	-.11	.02	.13	.10	-.08	-.09
Peer Support	-.08	.11	.28	-.14	.26	.30	-.02	-.16	-.23
Peer Goal Emphasis	-.27	-.14	.18	-.31	.06	.06	-.17	-.19	-.28
Peer Work Facilitation	-.31	-.13	.01	-.35	.15	-.12	-.31	-.28	-.29
Peer Interaction Facilitation	-.05	.13	.30	-.05	.21	.23	.13	.12	-.03
Communication	.01	.02	.26	-.16	.18	.21	-.02	-.20	-.19
Motivation	.08	.21	.41	-.02	.33	.41	.24	-.02	.09
Control	.05	.22	.27	.04	.27	.26	.30	.19	.04
Decision Making	.30	.11	.41	.02	.08	.31	.21	.03	-.07
Coordination	-.13	-.10	.25	-.24	-.07	.30	.10	-.08	-.07
Satisfaction with Company	.29	.46	.47	.28	.55*	.62*	.54*	.45	.44
Satisfaction with Pay	.22	.53*	.53*	.28	.53*	.45	.52*	.46	.48
Satisfaction with Peers	-.15	-.01	.22	-.25	.12	.06	-.11	-.22	-.08
Satisfaction with Supervisor	-.12	.01	.31	-.22	.21	.12	-.04	-.34	-.23
Satisfaction with Job	-.31	-.13	-.08	-.31	.14	-.13	-.29	-.26	-.33

*P<.05. The size of significant correlations varies because the number of groups in each computation varied. Because of small group size, some large correlations are non-significant.

TABLE 9

Relationships of Questionnaire Indices to Utilities

	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Managerial Support	.12	.06	.05	.07	-.04	-.03	-.07	.05	-.03
Managerial Goal Emphasis	.13	.14	.11	.16	.05	.08	.09	.17	.11
Managerial Work Facilitation	-.07	-.08	-.07	-.05	-.16	-.13	-.13	-.07	-.11
Managerial Interaction Facilitation	-.20	-.23	-.23	-.25	-.30	-.42	-.44	-.36	-.40
Peer Support	.09	.13	.17	.13	.06	.07	.05	.08	.09
Peer Goal Emphasis	-.21	-.15	-.19	-.15	-.19	-.13	-.14	-.07	-.12
Peer Work Facilitation	-.38	-.35	-.32	-.34	-.42	-.24	-.25	-.19	-.23
Peer Interaction Facilitation	-.13	-.12	-.11	-.13	-.15	-.23	-.25	-.29	-.23
Communication	-.01	-.04	.00	-.05	-.14	-.10	-.12	-.06	-.09
Motivation	-.07	-.02	.02	-.03	-.12	-.06	-.10	-.03	-.06
Control	15	.10	.06	.11	.05	-.10	-.10	-.02	-.04
Decision Making	.24	.09	.09	.08	.06	-.29	-.32	-.30	-.31
Coordination	.16	.08	.02	.07	.05	-.23	-.24	-.16	-.22
Satisfaction with Company	.00	.05	.14	.04	-.07	.01	-.03	-.01	.00
Satisfaction with Pay	-.15	-.05	.03	-.05	-.13	-.09	-.11	-.11	-.09
Satisfaction with Peers	-.39	-.33	-.32	-.33	-.38	-.24	-.26	-.21	-.26
Satisfaction with Supervisor	-.06	-.02	-.02	-.01	-.09	.00	-.03	.04	.00
Satisfaction with Job	-.36	-.30	-.32	-.31	-.31	-.15	-.18	-.12	-.16

TABLE 10

Relationships of Questionnaire Indices to Materials Costs

	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Managerial Support	.42	.26	.12	.08	.10	.09	.20	-.28	-
Managerial Goal Emphasis	.58*	.32	.19	-.11	.17	.15	.31	-.18	-
Managerial Work Facilitation	.44	.35	-.01	.04	-.14	-.09	.22	-.17	-
Managerial Interaction Facilitation	.00	.03	-.41	-.27	-.17	.07	.14	-.27	-
Peer Support	.43	.06	.02	-.02	-.02	-.01	.20	.39	-
Peer Goal Emphasis	.23	.06	-.26	-.35	-.24	-.11	.10	-.28	-
Peer Work Facilitation	.14	.08	-.29	-.07	-.41	-.37	-.17	-.34	-
Peer Interaction Facilitation	.21	-.06	-.32	-.15	-.19	-.05	.15	-.35	-
Communication	.23	.07	-.16	-.17	-.08	-.07	.10	-.27	-
Motivation	.28	.01	.00	-.02	-.05	.01	.23	-.38	-
Control	.37	.74*	.34	.42	.11	.27	.24	.01	-
Decision Making	.18	.10	-.22	-.14	.12	.30	.42	.02	-
Coordination	.26	.02	-.10	-.17	.28	.47	.35	-.24	-
Satisfaction with Company	18	-.15	-.03	-.07	-.02	-.01	.25	-.26	-
Satisfaction with Pay	18	-.13	-.07	-.02	-.16	-.07	.33	-.24	-
Satisfaction with Peers	.14	.04	-.30	-.05	-.46	-.39	.00	.26	-
Satisfaction with Supervisor	.43	.09	.04	.02	-.11	-.12	.15	.38	-
Satisfaction with Job	.24	.09	-.21	.06	-.45	-.40	-.22	-.41	-

*P<.05. The size of significant correlations varies because the number of groups in each computation varied. Because of small group size, some large correlations are non-significant.

TABLE 11

Relationships of Questionnaire Indices to Actual Expense
(As Percent of Adjusted Budget)

	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Managerial Support	-.09	-.39	-.57*	-.08	-.12	.03	.15	.00	.16
Managerial Goal Emphasis	-.13	-.10	-.50*	-.05	-.15	-.13	.02	-.03	.12
Managerial Work Facilitation	-.15	-.24	-.55*	.03	-.14	.01	.07	-.17	.04
Managerial Interaction Facilitation	-.23	-.38	-.66*	-.07	-.42*	-.09	-.07	.13	-.04
Peer Support	-.07	-.23	-.74*	-.19	-.44*	.00	.19	.09	-.01
Peer Goal Emphasis	-.05	-.03	-.57*	-.06	38	-.10	.06	-.02	.01
Peer Work Facilitation	-.05	-.16	-.64*	-.12	-.33	.02	.10	.10	.01
Peer Interaction Facilitation	-.30	-.25	-.70*	-.05	-.55*	-.02	.07	.11	-.17
Communication	-.31	-.32	-.73*	.03	-.34	-.01	.05	-.03	-.09
Motivation	-.23	-.20	-.63*	.04	-.29	-.01	.02	-.09	-.08
Control	-.14	-.19	.05	.21	27	.04	-.05	-.19	.00
Decision Making	-.18	-.43*	-.47*	-.14	-.05	-.12	.06	.15	.05
Coordination	-.01	-.20	-.35	-.14	-.06	-.05	.09	10	.02
Satisfaction with Company	- 24	-.09	-.61*	-.16	-.56*	- 10	-.03	-.09	-.30
Satisfaction with Pay	-.09	-.02	-.51*	-.11	- 34	22	.06	-.16	-.18
Satisfaction with Peers	.14	-.04	-.45*	-.19	- 43*	.04	.10	-.01	.07
Satisfaction with Supervisor	- 13	-.20	- 61*	-.01	-.26	.03	.09	-.16	.01
Satisfaction with Job	-.02	-.07	- 47*	-.11	- 26	01	.12	.12	.03

*P<.05. The size of significant correlations varies because the number of groups in each computation varied. Because of small group size, some large correlations are non-significant.

ORGANIZATIONAL DEVELOPMENT AND THE USE OF DATA AT THE PLANT

As the introduction to this report indicates, the original study design was tabled in favor of only the first phase of the study (initial measurement and minimal feedback); the second phase (intensive utilization) was, for all intents and purposes, cancelled; and the third phase (remeasurement) was delayed for decision until sometime in the future. The formal commitment, therefore, was to the presentation to work groups of their own tabulated data.

These data were distributed to each Division Manager, Department Manager, and Shift Foreman, plus staff managers, in a visit July 19 - 21, 1966, to the plant by two members of the project staff.

Although the format of the visit was deliberately left free prior to our arrival at the plant, it, in fact, took the form agreed upon at the outset of the study. The steps were:

(1) A presentation of his personal and total plant data to the Plant Manager in a private session.

(2) Distribution of their data sheets to all Division Managers and other top managers.

(3) An evening meeting of the top management group, in which initial feedback work was attempted, but not accepted.

(4) A meeting of all other managers in which their data were distributed.

(5) Separate, private sessions with each top manager to help him understand his data.

(6) Meetings with each Division Manager and his staff to undertake initial feedback work.

At the close of this visit, we once more approached the plant manager about the advisability of providing for additional help for lower level managers and supervisors in understanding their data. No commitment was forthcoming then or in response to a later inquiry. (Nor, it should be added, was there ever any specific rejection.)

Contact during the next months was minimal. Correspondence passed between the plant staff and the project staff about measures of plant performance and

about a mass-distribution brochure which the plant was having professionally prepared. The project director, aware that the original plan of the study had by that time passed by the board, asked for permission to visit and hold interviews in the plant, to monitor the events taking place within the plant during the months between the former survey and the next, should the latter actually take place.

Permission to visit was delayed several weeks, and was finally granted for a visit that occured in mid-January, 1967. In this visit, the project director interviewed all Division Managers, and nearly all Department Managers, asking about their use of the survey data following the July, 1966, distribution of it, and the comparative value that they attached to the various programs undertaken by the plant.

Use of the Data

Some of the managers and supervisors shared some of the results of the survey with their people. Some presented it individually, although most used a meeting as the presentation mechanism. Almost without exception, however, they never really explored the data in an effort to extract meaning and value from it, from the day that the two project staff members left in July, 1966, following the distribution of data. The January, 1967, interviews showed that:

- One-fourth to one-fifth of the department managers and shift foremen did something constructive with their data; three-fourths to four-fifths did little or nothing.
- Two-thirds used a group format for presenting results to their people, but only one out of six got any good discussion going, and two-thirds had little or no discussion of any kind, good or bad.
- 58 percent felt that their people seemed "involved" during the presentation of the data; 37 percent felt that their people were "indifferent."
- In an alternative, but similar, probe, 21 percent felt that their people were hostile or fearful, 32 percent felt that their people were apathetic or confused, and 42 percent felt that their people's reactions were positively oriented.

Their reluctance seems many-sourced. Some felt that they were already open and trustful in interacting with their subordinates, and marched forthwith into a discussion session, only to discover that they really did not trust each other all that much. Under the circumstances, these managers found they could not handle the situation and retreated to comfortable platitudes.

Others, particularly older supervisors, or those with older employees, ran into the "it isn't proper" attitude (their own or their employees' attitude). Often younger department managers who encountered this attitude found that it split the subordinate group rather drastically, with older employees commenting bitterly that the meeting was "getting out of hand," and younger employees stating that it was one of the most valuable activities that they had ever engaged in. The conflict was often tabled until another scheduled meeting, at which time the startled department manager found himself confronted with a conspiracy of silence. Apparently, the employees had resolved the conflict by deferring to the older of their members.

Nearly all of them expressed a felt need for help in the sheer mechanics of reading and understanding the data, help which, it had apparently been decided, they would not be able to have beyond the initial pass-out.

Some rationalized the experience. For example, one manager who was counseled in the July session by a member of the project staff and who at that time was noticeably surprised (a fact which was also volunteered by one of his associates in the January interviews), stated in January that his data had contained "no surprises." It should be added that the associate indicated that this man had attempted to change, in the face of the findings, but had had little success.

Some felt that the questions were confusing. Not unexpectedly, many of those expressing this feeling were those whose data were not particularly positive. We cannot dismiss the likelihood that some of the questions were confusing to some of the respondents. It seems likely in most cases, however, that negative data, with no help in understanding and using it, produced an adaptive rationalization.

Responses to a series of specific questions asked in the interviews are tabulated and presented in Table 12. These findings confirm what has been described above: the data were scarcely used. The substance of feeling among Department Managers, a feeling probably held more strongly by Shift Foremen, is that the survey was a waste of time, except as a benchmark against which to measure change in the future.

Respondents were also asked in these interviews to rate the amount of benefit that they personally feel they obtained from six change "programs" which had occurred in the plant by that time. Their responses are presented in Table 13.

We see from these results that the survey, although not the least valuable activity, was certainly seen as far from the most valuable. Those programs of a more actively "helping" character are, quite naturally, perceived as the most valuable.

The 1967 questionnaire also asked several questions about the use of the data. One question asked how much data for their own work group was given by the immediate supervisor. Managers, department managers, and shift foremen responded favorably and indicated that they were given "all or nearly all" of the results. However, the employees indicated that they were only given "some" of the results for their work group. Another question asked the extent to which the immediate supervisor asked for ideas and opinions when discussing the results of the survey. Employees were asked their ideas "to some extent" while supervisors were asked "to a very considerable extent."

Finally, the 1967 questionnare asked what things were needed by the immediate supervisor in order to be a better manager. The question asked what things were needed now and what things were needed a year ago; consequently a 1966-1967 retrospective comparison is possible. There was no change in what employees considered to be the greatest need of the shift foremen. Having more information about how his subordinates see and feel about things was seen as the greatest need both times. This result again emphasizes the importance of good communication. There was a dramatic change in the judged needs of Division Managers. In 1966 department managers judged their division managers as most needing practice in making use of information

TABLE 12

Use of Survey Data by Department Managers

How Presented		Amount of Discussion		Apparent Response*		Judged Effect		Overall Usefulness	
Not at all	5%	Little or none	63%	Hostile or fearful	21%	Little or none	58%	Little	21%
Separately to each	32%	Some	21%	Apathetic or confused	32%	Some	42%	Some	53%
Group Meeting	63%	Good	16%	Positive Response	42%	Considerable	0%	Considerable	26%

*The percentages do not total to 100% in this column because the 5 percent who did not present their data at all cannot be conveniently be categorized in any of the available responses.

TABLE 13

Reactions of Department Managers to Change Programs

Program	Mean* Rated Personal Value
Grid, Phase I	3.5
Grid, Phase II	3.9
Conference Leadership Training	3.3
Survey	2.9
Study Group Sessions (a "great books" seminar)	2.8
Problem-solving Exercises (a prepared package)	2.4

*Scale: 1 = little or no personal benefit, to 5 = a great deal of personal benefit.

they already have and having a situation that lets them do what they already know how to do. By 1967 these needs were rated considerably lower and the greatest need of the operations manager was having more information about how his subordinates see things. The department managers showed no appreciable year to year change and having a situation that lets him do what he knows how to do was rated most important in 1967. These relationships are presented in Table 14.

One of the major influences of what went on during this year, therefore, was an increase in the purely cognitive basis for change. The two major change events of the year were Grid Phases I and II (managers only), and the survey. Non-supervisory people were not in the Grid sessions, so that it was unlikely that any better understanding of how production workers feel came from that program. Despite their paltry use of the survey, therefore, it seems likely that a great deal of the increase in knowledge about the feelings and perceptions of subordinates came from the survey data.

The following implications present themselves:

(1) One of their crying needs in 1966 -- and only one -- was for supervisors to have greater information about how their people felt about things and saw them. The survey provided this.

(2) Another need that was substantially met was the need for information about principles of effective management. Presumably the Grid sessions gave some exposure to them.

(3) The most urgent need of 1966 was still the most urgent need in 1967--for coaching, counseling in acquiring behavior skills. This is also to be inferred from our analytic findings of the relationship of the 1966 survey to criterion data and the pattern of change to 1967: motivation seems most closely tied to those managerial characteristics that are probably changed only through guided practice (e.g., goal emphasis). These are among the indices that did not change significantly from 1966 to 1967. Motivation is also one of the variables most closely tied to performance.

TABLE 14

Means of Judged Needs

Needs	Division Manager		Department Manager		Shift Foreman	
	1966	1967	1966	1967	1966	1967
More information about how his people see and feel about things	3.50	3.30	3.14	3.43	3.68	3.66
More information about principles of good management	2.40	2.50	3.00	2.86	3.62	3.31
A change in the kinds of things he personally feels are important	3.50	3.20	3.28	3.00	3.29	3.25
Greater ability in handling the technical and administrative side of his job	2.80	2.70	3.14	2.71	3.21	2.97
Practice in making use of information he already has	3.40	2.90	3.28	3.14	3.70	3.53
A situation that lets him do what he already knows how to do	3.80	2.70	3.43	3.14	3.29	3.43

SOME CONCLUDING OBSERVATIONS ABOUT HOW THE STUDY WAS MANAGED

It requires only a barest skimming of the account of this study to determine that this effort, unlike those described in the first two case descriptions, was not successful. In this concluding section of the third case study, we present possible reasons for its having developed as it did, gleaned from detailed records of the study, prepared at the time events occurred and placed in the archive of the study.

Local Values and Orientation

The local top management group prepared, and distributed to its colleagues elsewhere in the company, a statement of its organizational development goals and objectives. Although well done in format and in language, its wording in retrospect suggests some shortcomings. Various objectives are stated in separate paragraphs, organized around such social-organizational topics as "participation," "recognition," and "problem solving." One is struck, in reading this document, at the absence of reference to groups of people, or the work group, as a fundamental consideration in organizational life. Instead, with a few notable exceptions, most objectives are stated in terms of the individual manager and his relationship to the organization. Some brief quotations may serve to illustrate:

> "Participation...is a function of the individual, but must be encouraged by the organization..."
>
> "Delegation of responsibility and corresponding authority by the organization to the individual is essential to effective self-direction and control..."
>
> "Commitment is the personal motivation of an individual to achieve an agreed upon objective of the organization...Thus, development by an organization of commitment to its objectives throughout its structure is truly one of the keys to its success."

These statements seem more than coincidental wordings of a viewpoint. To this writer they reinforce the impression gained during the course of the study itself that the predominate organizational values among the top managers of this plant did not include a central role for groups and group process. It is only natural, therefore, that their approach to organizational development activities emphasized individual, rather than collective, tasks. Feedback was viewed as a process of one man (the supervisor) communicating information to other individuals (his subordinates). Developmental training was a process of putting the most central role occupant (the manager or supervisor) through a course or activity calculated to enhance his individual performance. Although a stronger recognition of the role of the group in organizational life might not alone have been sufficient to produce a different outcome, its absence was certainly a contributing factor.

How the Site Was Selected

Whatever the reason, the selection of this plant was perhaps unfortunate. Although the plant may have been given the nod for participation in the study because they had already made some initial efforts in this direction, the cold, harsh fact is that it had already embarked upon a program that it felt some proprietorship for. It was, in fact, not a very good program; it was at that time poorly outlined and very general ("management education," "better communication," etc.). Those areas which approached specificity were "hard," technical areas -- incentive systems, job design, and so forth. Furthermore, the specific (and technical) areas were the subject of communications from and to the parent location loaded with terms such as "burden of secrecy," "going public," and "tips our hand." Clearly, the intent of the program was, at least at the start, for the plant manager's ears, for the company's ears, and for theirs alone.

In its other aspects, the program reflected the plant manager's own preferences. As described above, the statement of their development objectives --commercially printed and presented at a company-wide meeting--is almost devoid of references to the role of groups. Instead, it states its message almost exclusively in terms of the individual, on the one hand, and the organization on the other. Even when the group is mentioned, it's in a context of a

collection of individuals. This was the plant manager's preference: groups were an alien concept to him; his meetings, although relatively frequent, were stages for decisions that he had already made personally.

One corporate manager also observed that the plant manager resented any attempt to quantify humans and their relationships--his reaction to all of the company's evaluation programs, for example, was that it "isn't possible," "won't work," etc.

Therefore, the selection of this plant was from the outset a mistake, for several reasons:

(1) They were already involved in a local program and were bound to feel intruded upon.

(2) This particular plant was headed by a man whose personal predilections were against groups, measurement, and the dollar cost of the program.

(3) The plant manager stated at one point that he felt that the most important precondition for constructive change is stability! He had, apparently, turned the old dictum, "The more things change, the more they are the same," into an inverted cause-effect paradigm. In this light, his influence in resisting effective change attempts becomes more understandable. His impact was to counteract the unfreezing process, however.

The plant manager, therefore, had every reason to want to resist the setting up of this project in the plant. He was, however, in the peculiar position of having to reduce its scope without appearing to be out of step with the Organizational Development times in which he recognized he lives and for which he undoubtedly felt some affinity. He used his considerable skill in communication to do precisely that. In the initial meeting at the corporate headquarters, he insisted that he could make no commitment without allowing his staff to participate in the decision. Accordingly, he invited several persons from our staff to visit the plant to familiarize his management personnel with the proposed design. But our notes of that subsequent trip reflect a different atmosphere:

> "The reason for our visit was posed by the plant manager in terms very different from those used by him in the earlier corporate meeting...he presented this in the opposite light, that we were visiting the plant, at his invitation, to look them over, to see if, in our judgment, this would be an appropriate site for the study proposed by the home office..."

> "He structured our visit there in a manner that gave us greatest familiarity with the technical side of the plant...a minimum time, really, in general meeting and conference with his top staff..."
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> "The meeting ended at 4:30 (final wrap-up meeting of a half hour with top management) with the plant manager suggesting that we go ahead and prepare a proposal to be submitted, provided we found the plant to be suitable to the purposes intended by the project."

Only in a much later visit (the first one after the plant manager had been transferred) did we discover that he had truly "poisoned the air" before our arrival, by telling his group in angry terms that the company was trying to ram the program down their throats. He then assumed the role of the sweet-voiced moderator, defending his subordinates as best he could from corporate malevolence.

In this context, it is not surprising that no one in the plant really heard what we were talking about for a year and a half. They were so attuned to that early negative message that all other messages were blocked out. Our role and value in their eyes, therefore, became one of providing a benchmark for their own change program, nothing more. As a result, they were blocked from obtaining any help from us in working through the data, and their experiences in doing so were, with a few exceptions, unhappy ones.

Although the decision to proceed with the study without the wholehearted support of local plant management was undoubtedly a critical element in its failure, the obviousness of that situation was at the time by no means clear. Because communications among the corporate, plant, and project groups were often ambiguous, the impression was gained by project staff members that resentment was aimed by plant managers at the corporate group, not at ourselves and our program.

In any event, it now seems apparent that our program represented a set of activities that were contrary to the preconceived plans and values of many of the top managers of the plant, especially the plant manager himself. It is equally apparent that we were, in a very real sense, "jammed down his throat," and that little benefit came from the project for that reason.

Lack of Internal Resource Capability

The absence of external resource persons to help in the development process could have been counterbalanced by the presence of one or more internal resource persons. An organizational development specialist was, in fact, appointed from among the manager ranks during late 1966. A job description was prepared for him by the top management group. The content of that description suggests the definitely circumscribed boundaries of his intended role, however. Of the 14 points listed in the description, seven consisted simply of liaison or information services tasks. He was, in many ways, to serve as an information officer for the plant, by setting and distributing meeting agendas, distributing new information from outside the plant, carrying information and ideas from one group to another, serving as an informational linkage to the overall development plan, serving as a linkage to outside organizations on development issues, and indoctrinating new arrivals in development concepts and objectives. Three additional points were evaluative-ideological: he was to "critique" group meetings and "critique" day-to-day activities of units and individuals to make certain they were in line with development objectives, and to promote pursuit of those objectives. Only four of the points were in any sense developmental: directing skill training activities, personal counseling, aiding in conflict resolution, and long range development planning. Of these four, furthermore, the incumbent had at last contact begun only the last named, and had had little or no background, training, or experience in the other three. In all fairness, it must be said that he approached the task with eagerness and great interest. He was, in addition, one of the few managers who, according to the interviews, had made any noticeable effort to use the survey for constructive problem-solving purposes. His lack of prior experience, however, and the definitely limited nature of his assigned role, combined to reduce his effectiveness.

THE OUTCOME: WHERE THINGS STOOD AT THE CONCLUSION OF THE STUDY

When the plant manager was transferred (shortly before our phase of the study ended in 1967), the existing development program was scrapped. In its place, they developed a rational, formal plan, sequenced over a period of months and years. This plan, with a concern for the relationship between technical and social sub-systems, a need-based recycling character, and provision for several survey remeasurements, resembles in many ways what we proposed as utlization activities at the very outset.* It was viewed by plant management as unrelated to that proposal, however.

In this redesign of the development program, some elements of the former program, were retained, but others abandoned. Specifically, a highly programmed exercise in organizational goal-setting was abandoned. They stated that they had found the activities and exercises to be artificial, such that the result was a set of paper objectives and blackboard goals which bore little resemblance to the real needs of the organization or the members of it and to which no one felt committed.

The saddest fact of the study, of course, is that a full year and some its resources were lost in arriving precisely at that point from which they might have departed a year earlier. Certain conclusions can be obtained to guide others in similar development efforts, however.

It seems obvious, for example, that simply to measure the relevant attributes of a group or an organization and return the responses in tabulated form is not sufficient to the notion of "feedback." No serious practitioner has perhaps ever said that it was; yet many managers, by their efforts with such data, seem to imply that it is.

Another fact is that this study began without an absolutely essential ingredient: the full, complete backing of the top manager and his associates.

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*Its design had, in fact, been substantially influenced by a former visiting staff member of this Institute.

By their precept and example, persons at that level determine the success or failure of an entire effort. Their disinterest and detachment would have been bad enough; in this instance their passive resistance was fatal.

Finally, the development program that they did rely upon (a locally adapted version of the Managerial Grid) was successful in producing change at certain levels. It did not, of course, succeed in producing change where it was not applied, at the level of the basic work group made up of non-managerial employees and their foreman. In this aspect, at least, this study stands in contradistinction to these two previously cited.

IMPLICATIONS OF THE THREE CASES FOR MANAGING ORGANIZATIONAL DEVELOPMENT

A number of implications lie buried in the accounts given of these three change studies. In this present section of the report, however, we shall attempt to explore only those which are most obvious for the process of managing organizational development activites.

First, the tentative observation may be made that the three change programs resulted in somewhat different patterns of change by hierarchical level of the organization. In Case 2, the change program employed resulted in no appreciable change at the top, but substantial change at the middle and bottom levels of management. Contrasting this with Case 3 only, for the moment, we saw in the latter that its particular change program resulted in improved problem-solving behavior at the top of the organization, no change at the bottom, and a pattern of increased task structuring at the middle management level (increase in work facilitation, decrease in support).

The reasons for this difference between two of the cases must lie in either the natures of the two organizations or in the character of their respective change programs. Several possibilities occur:

(1) The management style of the plant manager in Case 2 was rather laissez-faire. Although he did not actively discourage pursuit of development goals and activities, he did not except by lip service set an example for others to follow. The plant manager in Case 3, on the other hand, was relatively autocratic and set an example both formally and informally from the beginning of the program of not really committing himself to the project and, in fact, of outright antagonism to its aims and methods.

(2) The change program in Case 3 (Managerial Grid) does not ordinarily involve non-supervisory employees, and it was not applied to them in this particular case. The program, therefore, produced change where both supervisor and subordinates were closely involved in the change activities (upper levels of management), but it did not produce change at the lowest levels of the organization. An explanation for the findings, therefore, may be that survey feedback, as

a mass-application method, reaches a broader array of individuals at the lower levels of the organization, whereas Grid training ordinarily helps those upper levels where it is usually applied.

(3) Age of participants may make some difference in the comparative success of one or the other program. We observed in the account of Case 3 a difference between older and younger participants in the perceived attractiveness of the feedback process. (No information one way or the other on this issue was forthcoming about Grid training, however.) There is some evidence to sustain the belief that non-supervisory employees and foremen were, on the average, older in Case 3 than in Case 2. Department managers were, if anything, younger in Case 3 than in Case 2, since these positions were used as rotational training slots for young gradute engineers and others slated for future executive positions in Case 3, but not in Case 2. Case 1 provides additional reinforcement for the age explanation, since average age in those three plants is also somewhat below that in Case 3.

A slightly more complicated picture emerges when we look at a hierarchical break on managerial leadership change for the three plants of Case 1 (see Table 15). Here we see a pattern of differences among the three plants, and similarities to each of the other two cases.

In both Plants E and F, there was positive change at the top management level, but the amount of change among top managers in Plant E is nearly three times the amount for their counterparts in Plant F. Furthermore, it tends to occur on somewhat different leadership characteristics: top management in Plant F increased most in the task dimensions (goal emphasis, work facilitation) but on both interpersonal dimensions (support, interaction facilitation.)

The pattern of change at middle management levels is broad and relatively similar for both plants. All leadership characteristics show change, although the amount of change in the team-building function (interaction facilitation) is somewhat lower.

TABLE 15

Changes by Hierarchical Level on Managerial Leadership in Case 1

Hierarchical Level	Plants					
	E	Greatest Changes	F	Greatest Changes	W	Greatest Changes
Top Management	+.64	+ Support Work Facilitation Interaction Facilitation	+.23	+ Goal Emphasis Work Facilitation	---	
Upper Middle	+.46	+ All substantial	+.46	+ Support rest moderate	+.40	+ Work Facil.
Middle	+.20	+ Work Facilitation	+.34	+ Support Goal Emphasis Work Facilitation	+.43	
Lower Middle	+.37	+ Support Goal Emphasis Work Facilitation	+.29	+ Support Goal Emphasis Work Facilitation	-.02	- Support Interaction Facil.
First Level Supervision	+.25	+ All moderate	+.23	+ Work Facilitation rest moderate	-.09	

The change pattern for first level supervision is broad and relatively moderate. The structuring aspect of leadership (work facilitation) shows exceptional increase in Plant F, but this may reflect some preoccupation at that period with aspects of the cost reduction program.

It is interesting to contrast the general pattern observed in Plants E and F--differential, but positive, change at the top, broad and substantial change at the middle management levels, and broad, moderate change at the lowest levels--with the pattern in Plant W. Although there is no equivalent of the very top level of management in the other two plants, the other levels are capable of being equivalently represented. Upper middle and middle management changed much like their counterparts in Plants E and F in degree, but largely upon the structuring aspect of leadership (work facilitation). Lower middle management and first-level supervision changed not at all, or slightly negatively, and upon the interpersonal dimensions. This pattern is quite consistent with that plant's heavy involvement in a cost reduction effort, without the moderating effects of a simultaneous development program.

A second observation is that the plants in Cases 1 and 2, where feedback was undertaken, differ in the ways in which that process was handled. In Case 2, simple, low-pressure encouragement to share the data with one's subordinates was used to stimulate that development process. In Plant F, the same end was attained by a process of "normative enforcement": the nature of the desired activity was described, given positive sanctions of an informal type by top managers, and allowed to follow its natural course. As in Case 2, most managers and supervisors in Plant F elected to hold these sessions. They were help, however, because "we all expect each other to do this" -- that is, influence was exercised by norms and informal expectations.

In Plant E, an expectation was also stated, formally and in writing, with provisions of accountability to report the outcome back up the management line. Here, unlike the other plants, legitimate authority was used to make the feedback process part of the regular management system at that point in time.

In both Plants E and F, therefore, the feedback process was positively sanctioned, by precept and example. In this sense it was stronger than

either Case 2 (sanctioning by precept, but not example), Case 3 (nega ive sanctioning by example), or P'ant W (indifference or some slight negative sanctioning). It is, however, interesting to note that less change occurred among top managers of Plant F, where there was the greatest personal commitment to the change process and a largest involvement in auxiliary activities of a counseling and confrontational nature, than in Plant E, where personal commitment and auxiliary involvement were lower, but the power of office was lent to the process. (One must, of course, recognize that Plant F was simultaneously coping with a rather stressful cost reduction program.)

The principal point to be noted from these observations is that positive sanction of top management is apparently necessary for the success of the program, either by its personal commitment and involvement, by its official power, or, at the very least, by its willingness not to undercut the program. To the extent that these data indicate greater or less effectiveness of any particular form of sanction, they suggest that there is more to be gained by sanctioning through the power of office than by personal commitment alone.

Finally, it seems worthwhile to note that the findings suggest that a change program, to be effective, must be geared into the working system of the organization. Grid training, for example, did very little in Plant E, where it was used in bits and pieces for individual managers and supervisors, yet it produced considerable benefit in Case 3 at those upper levels where it was used systematically. Feedback similarly did very little in Case 3 or Plant W, where it was allowed to flounder in psychological space, unconnected to any other aspects of organizational life. It worked extremely well where it was made a part of the organizational adaptive system, that is, Case 2, Plant F, and Plant F.